NORTH CAROLINA Medical Journal

Vol. 13 No. 10
October, 1952

IN THIS ISSUE:

THE SURGICAL SIGNIFICANCE OF GASTRIC ANALYSIS — BENNETT AND WOMACK

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Table of Contents, Page II

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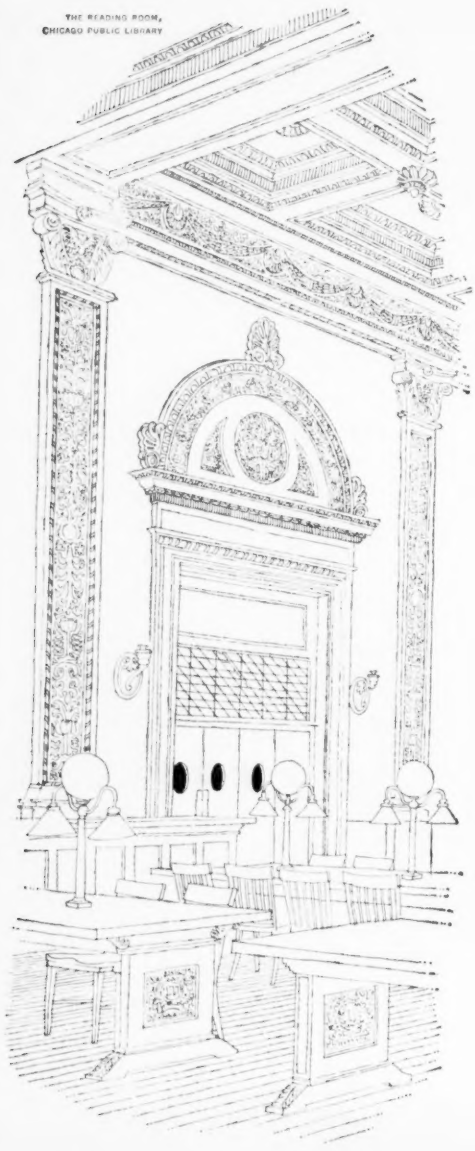

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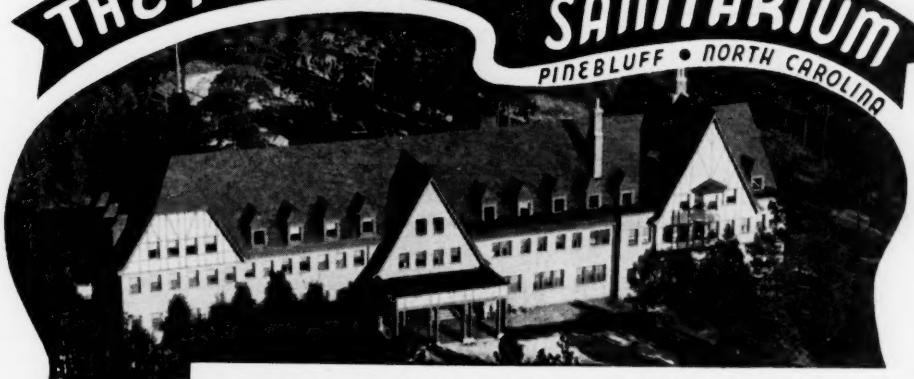

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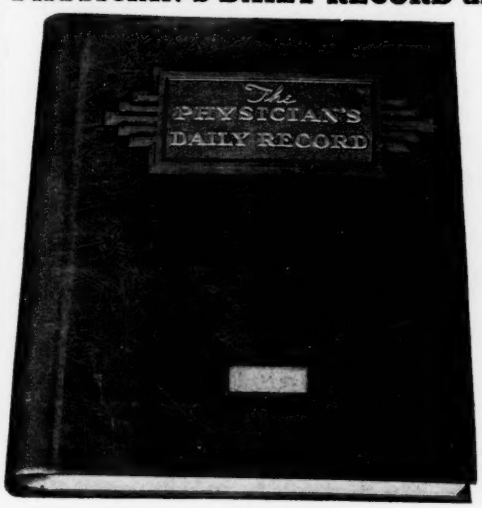

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CONTENTS

ORIGINAL ARTICLES

The Surgical Significance of Gastric Analysis —Chester G. Bennett, M.D., and Nathan A. Womack, M.D. 537

Hip Prosthesis: Its Contribution to Reconstruction Surgery of the Hip—Harry Winkler, M.D., and Kenneth L. Jordan, M.D. . . . 546

Rural Medical Care in North Carolina—Frederic C. Hubbard, M.D. 551

Histoplasmin Sensitivity in Selected Areas of North Carolina With Report of a Case of Probable Histoplasmosis in a Child—Robert J. Murphy, M.D., and William H. Davis, Jr., M.D. 556

The Management of Gout — Henry L. Valk, M.D. 560

Clinical Evaluation of Cortisone in Ophthalmology—Clinton B. Chandler, M.D., Samuel D. McPherson, Jr., M.D., and Frederick W. Stocker, M.D. 563

The Local Use of Chloromycetin in Infected Ears—John R. Ausband, M.D., and James A. Harrill, M.D. 568

Treatment of Septal Abscess — Wardell H. Mills, M.D. 571

Experiences With the Papanicolaou Smear — Thomas W. Huey, Jr., M.D., Paul Kimmelstiel, M.D., and Roland E. Pixley, M.D. . . 574

Early North Carolina Medicine: Physicians of the Colonial Period—Part II—Dorothy Long 577

EDITORIALS

Postgraduate Education in North Carolina . 579

North Carolina Memorial Hospital Opens . . 579

British Comments on American Medical Education 580

How Truthful is Truman? 581

PUBLIC RELATIONS

582

BULLETIN BOARD

News Notes from the Duke University School of Medicine 583

News Notes from the University of North Carolina School of Medicine 584

North Carolina Academy of General Practice 584

Durham-Orange County Heart Association . 584

North Carolina Surgical Association 585

County Societies 585

News Notes 585

Announcements 585

BOOK REVIEWS

590

IN MEMORIAM

591

INDEX TO ADVERTISERS

XXXI

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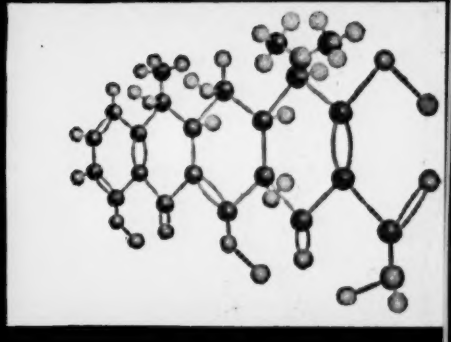

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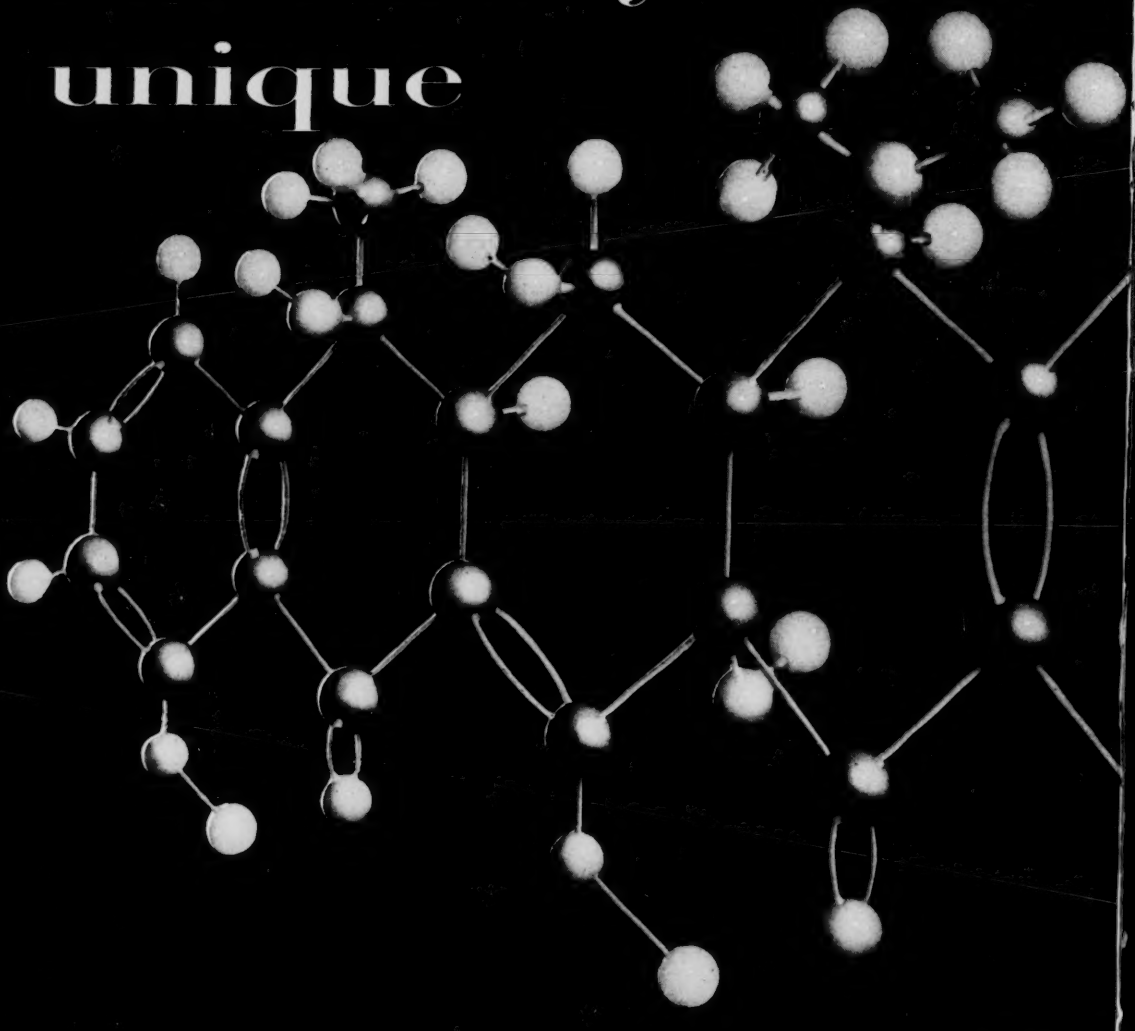

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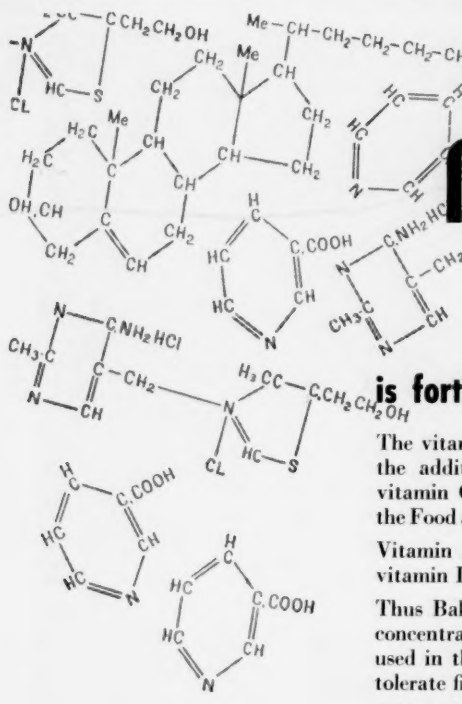

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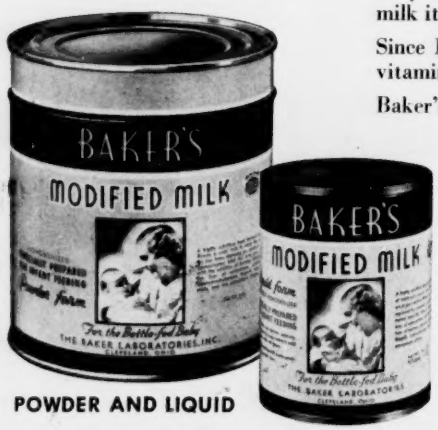

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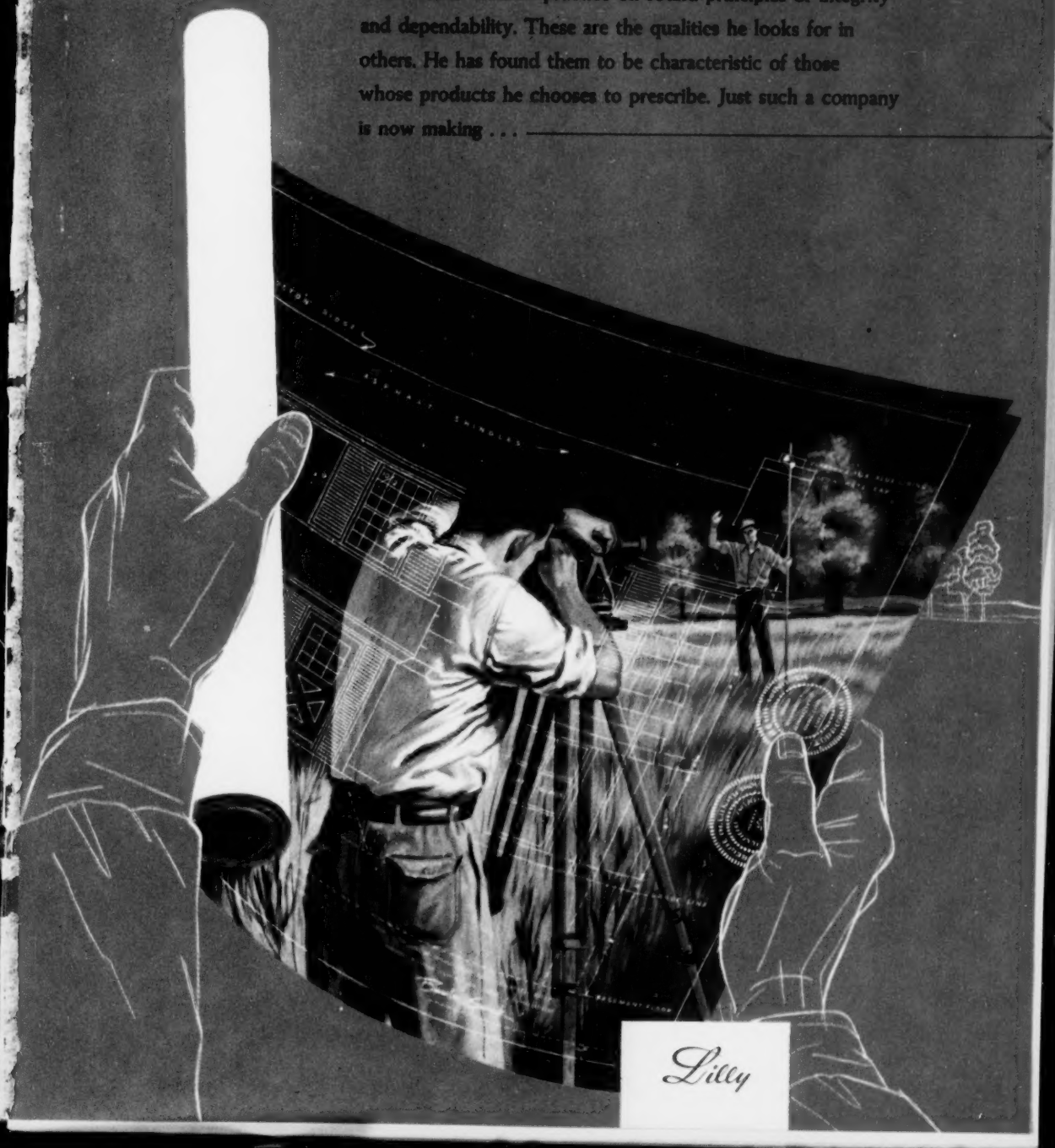

Lilly

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Since the antianemia effect of liver was discovered twenty-six years ago, true pernicious anemia has ceased to be a necessarily fatal disease; pharmaceutical refinements have made liver therapy increasingly acceptable; knowledge of the constituents of liver and the nature of anemias has increased. These developments have been helped substantially by teamwork between the Lilly Laboratories and other investigators.

It is now known that several chemically dissimilar substances in liver are effective in macrocytic anemias. For example, vitamin B_{12}, which is also derived as a by-product of Lilly streptomycin production, is usually effective in pernicious anemia. It is ineffective, however, in certain other macrocytic anemias in which folic acid, another natural constituent of liver, is indicated. From investigations such as are continuing in the Lilly Laboratories, it now appears that there are still other unisolated substances in liver which are potent agents capable of producing blood regeneration. Until all of these are identified and their relationships more clearly defined, the use of liver extract in macrocytic anemias will continue as sound therapy.

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NORTH CAROLINA MEDICAL JOURNAL

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THE SURGICAL SIGNIFICANCE OF GASTRIC ANALYSIS

CHESTER G. BENNETT, M. D.

IOWA CITY, IOWA

and

NATHAN A. WOMACK, M.D.

CHAPEL HILL

The advent of roentgen ray examination of the stomach by means of a contrast meal has increased the accuracy of diagnosis of gastric and duodenal lesions to such an extent that gastric analysis, one of the important diagnostic tools of a generation ago, has lost much of its value. As an aid in the understanding and interpretation of upper gastrointestinal disease this procedure still has much to offer. The purpose of this discussion is to demonstrate some of the usefulness of the study of stomach secretions. In so doing we can well afford to consider briefly the cells that give rise to such secretions and their method of function, for it is only by studying the normal that we can appraise properly the abnormal.

The Gastric Mucosa

The surface epithelium of the stomach is made up of fairly large longitudinal cells, the innermost part of the cytoplasm containing numerous droplets of mucus. This is a peculiar mucus in the sense that it is not precipitated by acetic acid. In the normal state, it does not collect in the cytoplasm, producing the characteristic goblet shape so commonly seen in those cells forming the surface layer of the intestinal mucous membrane. Also lacking is the striated border which is as commonly seen in the cells of the intestinal mucosa. This gastric mucus acts both physically and chemically to protect the mucosa of the stomach from injury. It forms a coating over the surface epithelium and serves to protect the stomach in the empty state from the corrosive action of high acid-pepsin mixtures. It is slimy and tenacious, and tends to enmesh bacteria as well as serve as a lubricant for food.

The ability of this mucus to buffer hydrochloric acid has been the subject of numerous papers, and there has been a considerable amount of discrepancy between the various reports. A recent publication by Glass and his associates[1] has served to clarify the problem considerably. Visible mucus from the surface epithelium was studied, as well as dissolved mucoproteose from mucus breakdown and dissolved mucoprotein from the neck cells. When these various forms of mucus were subjected to dialysis, it was found that most of those substances responsible for the alkalinity of the mucus and its power to buffer the hydrochloric acid secreted by the stomach could be dialyzed, and were therefore probably mineral bases bound loosely to the protein. Nevertheless, mucous substances dissolved in the gastric juice apparently did participate to some extent in the buffering of the gastric acid exclusive of their electrolyte, amino acid, peptide, and other dialyzable contents, this ability being almost in inverse proportion to the acid activity of the gastric mucosa. By and large, the total buffering capacity of the mucous substances dissolved in gastric juice ranged from a little over 1 per cent to a maximum of slightly over 10 per cent of the free hydrochloric acid present.

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Cellular Structure of the Gastric Glands

Where one views the stomach mucosa under low magnification, a huge number of small gastric pits are apparent. Opening into each of these pits are several of the so-called gastric glands. Each gland is a small tubule unit from 30 to 50 microns in length, possessing an extremely narrow lumen and ending blindly. This blind end is usually coiled and sometimes divides into two or three branches. We are concerned with four types of cells seen in these gastric glands: (1) the mucous neck cell, (2) the chief, or zymogenic cell; (3) the parietal, oxyntic or acid-secreting cell; and (4) the argentaffin cell of Heidenhain.

Mucous neck cells

The mucous neck cells are found in the neck of the gland as the cells approach the wall of the origin of the pit. In the well differentiated mucous neck cell, mitotic figures are never observed. However, as one approaches the bottom of the foveola, one encounters a gradual lack of differentiation in the epithelium, and it is possible that the neck cells arise from these latter areas. These cells differ from those of the surface epithelium as well as from the zymogenic and parietal cells, although there is a morphologic relationship with the latter when stained only with nuclear dyes. When these cells are stained with mucicarmine or mucihematin, however, one notes in the cytoplasm many brilliantly stained granules, while there is no staining of the granules in the zymogen-producing cells. This staining reaction is specific and would suggest that there are mucus-secreting elements in the cytoplasm of these neck cells.

The mucus secreted by the neck cells is of a different kind, however, from that seen in the gastric surface epithelium or coming from the mucous gland elsewhere in the body. This soluble mucin or glandular mucoprotein, as it has been more recently called, has been the subject of considerable recent investigation by Glass and his associates[2]. They have produced evidence that it probably represents the intrinsic gastric factor concerned in forming the hematopoietic principle, and is probably concerned in some way with the absorption of vitamin B^{12}. The secretion of this material by the stomach cells is apparently under the control of the vagus nerves. They noted that after successful vagotomy the secretion of mucoprotein is depressed completely, and the normal response of increase in production as a result of insulin hypoglycemia is lost. It must be recalled, however, that patients who have been subjected to section of both vagus nerves have been observed for many years following the operation without any evident tendency toward the development of macrocytic anemia. If, therefore, the neck cells are responsible for the secretion of the intrinsic principle, this function must also reside in other areas in the intestinal tract not under vagal control.

Zymogenic cells

The chief cells, for the most part situated in the distal half of the gland, are arranged in a simple layer on a basement membrane and secrete directly into the lumen of the gland. Just before they discharge their secretion one may identify numerous small granules in the cytoplasm near the lumen. These cells degenerate very rapidly unless the stomach contains no acid. Since the days of Heidenhain in 1870 all experimentation has served to indicate that these cells secrete pepsin and that the above mentioned granules are pepsinogen, a precursor of the enzyme. Whether or not they also secrete rennin has never been firmly established. Mitotic division is never observed in these cells, and it is still not understood exactly whether they are able to undergo division or whether they renew themselves by differentiation from the mucous neck cells. In all probability the latter is true.

Parietal cells

Situated between the zymogenic or chief cells, but much more numerous in the region of the neck of the gland, is a spherical but sometimes triangular type of cell, often occupying even a peripheral position between the chief cells and the basement membrane. These are called parietal cells, and may be easily distinguished because their cytoplasm stains brilliantly with any of the acid aniline dyes such as eosin. The cytoplasm is marked by a characteristic series of canals forming a loose network between the cell surface and the nucleus. These cells communicate with the main lumen of the gland through small interstices between the chief cells. It is through these canals that the secretion of the parietal cells enters the lumen. Here again one rarely encounters a mitotic

figure, and again it is possible that these cells derive from the relatively indifferent mucous neck cells.

The Secretion of Hydrochloric Acid

It seems to be a generally accepted fact that the function of the parietal cell is the secretion of hydrochloric acid, but the method in which this secretion occurs is still a source of great controversy. This phase of the subject has been considered in detail by Babkin[3].

Site of formation

At present there are two antagonistic points of view concerning the site of formation of hydrochloric acid by the parietal cells. One group of investigators feels that the acid is formed as a precursor within the cytoplasm and converted into acid in the lumen of the gland, while an opposing group is of the opinion that the actual hydrochloric acid is formed within the cytoplasm. The prevailing data on which both of these views are based are subject to criticism. Yet, since the subject is of fundamental clinical importance, it might be considered briefly here.

Claude Bernard is supposed to have demonstrated that the acid is formed on the surface and not in the gland by the use of a mixture of ferric lactate and potassium ferrocyanide, which on addition of acid precipitates Prussian blue. The use of this indicator when injected intravenously has been questioned by Harvey and Bensley. The subsequent work of Chambers, who injected neutral red directly into the parietal cell by the use of micro-dissection methods, and that of Hoerr and Bensley, who used the Altmann-Gersh freezing-drying method, indicates that the parietal cells have an alkaline reaction, while the crypts of the glands have an acid reaction.

Mode of secretion

The biochemical pathway through which the hydrochloric acid is secreted is likewise subject to considerable discussion. We have hardly progressed beyond the level of theorizing. There are, however, several experimental observations that must be reckoned with. Davenport[4] has demonstrated that there are large amounts of carbonic anhydrase in the gastric mucosa of cats, rats, and rabbits. In a very careful study he has further demonstrated that this carbonic anhydrase is present in the parietal cells of the gastric mucosa of cats and rats and is absent in the chief cells. In cats the concentration is five to six times higher than that in red blood cells, while in rats it is somewhat lower. Malmstrom and Glick[5] have recently added corroborative observations. By the use of a special technique these authors have described a quantitative histochemical method for the determination of zinc, which in this study is applied to the quantitative distribution of zinc with respect to different types of mucosal cells in the dog's stomach. It was found that the highest zinc concentrations per unit of reduced weight were found in the epithelial and parietal cell regions. The distribution of zinc corresponded to the distribution of carbonic anhydrase, and it is of interest to recall the work of Keilin and Mann demonstrating that approximately 0.33 per cent of this enzyme is composed of zinc. It is highly possible, therefore, that the concentration of hydrogen ion in hydrochloric acid formation may be a function of carbonic anhydrase. It is also interesting to note that by means of histochemical studies in the actively secreting stomach, chloride is found to be concentrated in the connective tissue and submucous tissue and to a lesser extent in the subepithelial layers.

Variations in Gastric Secretion

In all probability the secretion of gastric acid in the human being is greater at some periods than at others. From the work of Hollander[6] it is apparent that the acid normally secreted by the parietal cells in the body is almost pure hydrochloric acid that is slightly hypertonic and has a *p*H around 0.87 with a titratable acidity of 0.17 N. A portion of this hydrochloric acid is very quickly combined with other substances in the gastric juice, which also contains significant amounts of sodium, potassium, bicarbonate, and phosphate. The volume of gastric juice secreted by the normal stomach in a period of 24 hours is variable indeed, not only in different individuals but in the same individual, and amounts varying from 1 to 3 liters are not unusual. The different components making up the total of gastric secretion likewise do not always maintain the same relationships, and their concentrations will often vary not only from day to day but from hour to hour.

It is well for us to remember that the entire mucous membrane of the stomach is not

identical. While the glands of the fundus and body of the stomach seem to be concerned chiefly with the formation of pepsin and hydrochloric acid, this is not true of the small group of glands noted around the cardia and the much larger area around the pylorus. In man the former group is more or less insignificant, but in the region of the pylorus there is an area measuring from 4½ to 5½ cm. on the lesser curvature side and approximately 4 cm. on the greater curvature side that is composed of glands of a peculiar nature. The cells of these pyloric glands produce mucus of a type that resembles in all of its staining characteristics that seen in the neck cells of the fundic glands. While occasional parietal cells may be encountered in the pyloric glands, they are of no functional significance. Interestingly enough, this pyloric juice is alkaline, and in all probability its secretion plays no important role in the digestion of proteins. It probably has several functions, one being the production of the hormone gastrin, which has the property of stimulating the outpouring of acid gastric juice.

In almost any lesion that involves the stomach, as well as with increasing age, there is a tendency toward replacement of the chief and parietal cells by mucus-secreting cells. This is not a diffuse process, but consists rather of a histologic regression of the lower boundary of the body of the stomach, or that area occupied by the body glands. This type of atrophy is commonly seen beyond the age of 50, and indeed may be carried to such an extent that a considerable group of apparently normal individuals beyond the age of 60 have no titratable free hydrochloric acid in the stomach.

Stimulation of Gastric Secretion

Although the anatomic site of the formation of acid and the bio-chemical pathway by which it is formed are not known, those factors that stimulate the production of hydrochloric acid in the stomach are fairly well understood. There are two routes by which the gastric glands may be stimulated; the nervous, which is by way of the parasympathetic system, and the humoral, which is by way of a chemical mediation through the blood stream. The volume and acidity of the gastric juice secreted by a stomach containing no food bears a direct relationship to the repetitiveness and the intensity of vagal stimulation, whereas the amount of gastric juice produced by the humoral method under normal circumstances will depend upon the amount and nature of the food taken in the stomach. The vast majority of the humoral stimulation obtains from the apparent formation of a substance by the mucosa of the antrum, particularly near its duodenal border, which has been called gastrin. Perhaps a similar humoral mechanism is present in the intestinal tract, but this plays a relatively unimportant role in the secretion of gastric acid.

The parasympathetic mechanism

Since the nervous impulses producing a stimulation of gastric secretion are medicated through the vagus nerves, it was only logical to assume that this was the result of the action of acetylcholine produced at the nerve ending and affecting the gastric epithelium. For many years it was impossible to demonstrate effectively that acetylcholine when injected intravenously would have such an action. However, as a result of the recent studies by several groups of workers, and in particular Gray and Ivy[7], Nacheles, Mo.el, Kosse and Neuwelt[8], and Stavraky[9], it has become fairly well established that a large subcutaneous dose of acetylcholine will produce a marked increase in secretion by the stomach. It is now apparent that previous experiments were unsatisfactory mainly because too small a dose of acetylcholine was used. However, a copious secretion of gastric juice can be obtained by administering a small dose of acetylcholine if prostigmine, which delays the destruction of acetylcholine, is given at the same time. Acetylbetamethylcholine (Mecholyl) is many times more potent than acetylcholine when each is used separately. Babkin[3] has postulated that acetylcholine functions by stimulating directly the mucous cells and the chief cells, but acts indirectly on the parietal cells by first liberating histamine within them.

When the stomach is stimulated through its cholinergic mechanism, whether through the direct injection of acetylcholine or by stimulation of the vagus nerves or by the production of insulin hypoglycemia, the type of secretion obtained is such as to suggest that all elements of the gastric mucosa participate. The volume of secretion is large. There is a high content of both free and

combined acid. There is a high total chloride content, and the material is both rich in mucus and high in peptic digestive power.

The humoral mechanism

Gastric secretion as a result of stimulation by way of the humoral mechanism seems to be almost completely related to stimulation of the parietal cells, and the result is the production of both acid and fluid. This can be observed when histamine is injected intramuscularly. Again, this seems to be the action of weak solutions of alcohol in the stomach. As a result it has been suggested that the action of alcohol in the production of free hydrochloric acid in the stomach is one of liberating histamine in the gastric mucosa[10].

Perhaps the most effective of the humoral mechanisms is that of gastrin. Since its first description by Edkins[11] there has been much discussion at times even as to its actual existence, and frequently as to its composition. It can be fairly authoritatively stated now that it is possible to extract a substance from the mucosa of the pylorus which conforms to none of the crystaloid components of the gastric mucosa, which is not histamine, and which is not choline. This substance when injected into an animal intramuscularly or intravenously produces considerable gastric secretion rich in water and acid and very poor in protein. The surgeon's failure to recognize the importance of the secretion of gastrin by the pyloric portion of the stomach was perhaps the most outstanding reason for the failure of surgery in the treatment of peptic ulcer until rather recently.

From the above discussion it becomes apparent that we can divide roughly the stimulus to gastric secretion into two types. One of these, which has been called nervous or cephalic stimulation, resembles in all respects the result that obtains when acetylcholine reaches the mucosa of the body and fundus of the stomach. The other, which has been called hormonal or humoral stimulation, seems to be identical to that which occurs when histamine reaches the mucosal cells of the upper part of the stomach.

Inquiry into the Cause of Excessive Secretion

Excessive secretion on the part of the gastric mucosa undoubtedly often occurs for short periods without evidence either subjective or objective on the part of the individual. Transient situations of stress or dietary indiscretion are frequent and without apparent permanent organic event. Long sustained periods of increased acid secretion, however, can result in serious damage.

Duodenal and gastrojejunal ulceration are almost universally associated with excessive gastric secretion and gastric activity attending such protracted periods. It is important for us to ascertain, if possible, which of the two secretory mechanisms is at fault in the production of such an increase in gastric function. Therein lies the logic of therapy. From the point of view of the surgeon, if the humoral mechanism is excessively stimulating the gastric gland, this can be easily obviated by resecting the antrum of the stomach. Were the neuromechanisms to be at fault, this could be cared for by sectioning the vagal nerves supplying the stomach, an operative procedure that has been spearheaded so ably during the past few years by Dragstedt. It has been estimated by Dragstedt and his colleagues[12] that in normal animals the antral mechanism probably accounts for about 45 per cent of the gastric juice secreted, while the nervous mechanism accounts for an additional 45 per cent. During abnormal situations, however, this relationship may not hold.

We recently set up an experiment with the idea of determing which of these two mechanisms was at fault in patients with duodenal ulcer, and that is the essence of this report*. If the stomach was empty and the patient at rest, we could determine the amount of secretion resulting from cephalic stimulation by constant aspiration of the stomach for a given period of time. This, the so-called estimation of night secretion, has been previously developed by others. Following the conclusion of this estimation, we felt that if the patient were then given histamine intramuscularly, we could determine the sensitivity of the stomach to the action of histamine and in that way perhaps estimate the part that was being played by the antrum.

Material and Method

Gastric secretion studies were carried out as follows: The subject received no food or fluids after 3:00 P. M. A Levin tube was inserted into the stomach at 7:00 P. M. and by aspiration the stomach emptied of all its con-

*These patients were studied at the University Hospital, Iowa City, Iowa.

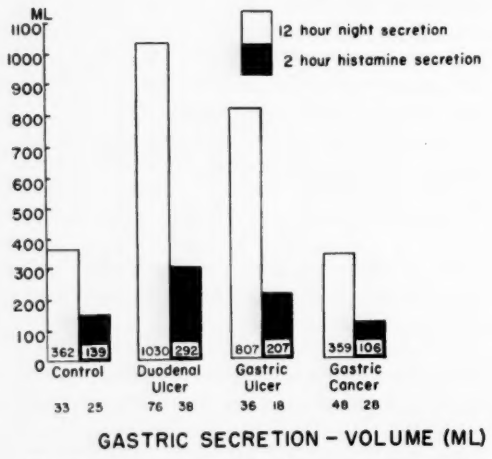

Fig. 1. Volume of gastric juice expressed in milliliters obtained from the fasting stomach (12-hour night secretion) and following the administration of histamine.

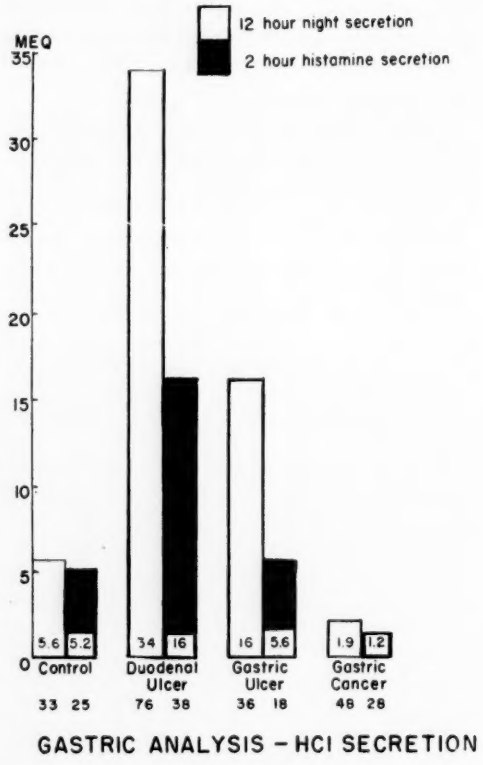

Fig. 2. Amount of hydrochloric acid expressed in milli-equivalents obtained from the fasting stomach (12-hour night secretion) and following the administration of histamine.

tents. Immediately following this a Wangensteen suction apparatus was attached to the tube and the gastric secretions collected continuously for 12 hours. At the conclusion of this 12-hour period the subject was given 1 cc of 1:1000 histamine phosphate, following which the gastric secretions were again collected for an additional 2-hour period, again employing the Wangensteen suction apparatus. The 12-hour and 2-hour aspiration specimens were measured and the clinical units of free hydrochloric acid determined by the sodium hydroxide titration method. The 12-hour and 2-hour free hydrochloric acid output was calculated and expressed in milli-equivalents of hydrochloric acid (since free acidity as expressed in clinical units is synonomous with milli-equivalents per liter, the volume of gastric juice secreted expressed in liters multiplied by the free acidity equals the milli-equivalents of hydrochloric acid secreted in 12 and 2-hour periods). This method of expressing the amount of hydrochloric acid gives quantitation rather than simple concentration, and where the gastric secretion is markedly contaminated by saliva and at times by regurgitated duodenal juice as a result of the indwelling nasal tube, it is almost essential for any degree of accuracy.

In order to obtain a comparable group to serve as controls, 12-hour night secretion studies were carried out on a series of 33 patients selected at random on the surgical wards who did not present any evidence of peptic ulcer but who were suffering from other diseases such as hernias, varicose veins, and so forth. Twenty-five of this group of patients were subjected to the 2-hour histamine studies. Seventeen were male and 16 female. The average age of the entire group was 55.12 years, the females averaging 56.43 years, the males 53.88 years. This age is comparable to that of the patients with duodenal ulcer studied.

The 12-hour night secretion study was then carried out on 76 patients with duodenal ulcer. Thirty-eight of this group of patients were also subjected to the 2-hour histamine test. Diagnosis of duodenal ulcer was confirmed at operation in 64 of these patients.

Table 1

Twelve-Hour Night Secretion Test
(Volume and Amount of Hydrochloric Acid Secreted by the Fasting Stomach in Twelve Hours)

Group	No. Patients	Average Age (years)	Volume (mil.) Average	Volume (mil.) Ranges	Output HCL (mEq) Average	Output HCL (mEq) Ranges
Control	33	55	362	43-1500	5.6	0-31
Duodenal ulcer	76	55	1030	200-2600	34.0	0-167
Gastric ulcer	36	55	807	160-2300	16.0	0-81
Gastric cancer	48	65.6	359	15-1150	1.9	0-66

Table 2

Two-Hour Histamine Test
(Volume and Amount of Hydrochloric Acid Secreted in Two Hours Following the Injection of Histamine)

Group	No. Patients	Average Age (years)	Volume (mil.) Average	Volume (mil.) Ranges	Output HCL (mEq) Average	Output HCL (mEq) Ranges
Control	25	55	139	15-300	5.7	0-18
Duodenal ulcer	38	55	292	25-630	16.0	0-45
Gastric ulcer	18	55	207	15-500	5.6	0-23
Gastric cancer	28	65.6	106	0-300	1.2	0-21

The stage of their disease varied from early ulceration to chronic lesions with complete obstruction. The remaining 12 were diagnosed by roentgen ray examination and history combined as having duodenal ulcer. Sixty-eight of these patients were males averaging 54.85 years, while 8 were females averaging 56.75 years. The average age of the entire group was 55.04 years.

Thirty-six patients with gastric ulcer proved at the time of operation had preoperative 12-hour night secretion studies. Eighteen of this group also had the 2-hour histamine secretion study. Thirty-one of these patients were males averaging 55.77 years, while 5 were females averaging 50.4 years. The average age of the entire group was 55.02 years.

Forty-eight patients with proven gastric carcinoma by surgical exploration were subjected preoperatively to the 12-hour night secretion study, while 28 of this group also had the 2-hour histamine study. Thirty-five of this group were males averaging 65.97 years, and 13 were females averaging 64.61 years. The average age of the entire group was 65.6 years.

Results

Volume of secretion

In our control group of 33 patients, there was an average secretion of 362 ml. of gastric juice during a 12-hour night secretion period, with an average of 12.5 clinical units of free hydrochloric acid and an average hydrochloric acid output of 5.6 milli-equivalents. Seventy-six duodenal ulcer patients secreted an average volume of 1,030 ml. of gastric juice during a 12-hour night secretion period, with an average of 30 clinical units of free hydrochloric acid and an average hydrochloric acid output of 34 milli-equivalents. Thirty-six patients with gastric ulcer had an average night secretion volume of 807 ml., with an average of 16 degrees free hydrochloric acid and a hydrochloric acid output of 16 milli-equivalents. Forty-eight patients with gastric carcinoma secreted an average of 359 ml. during a similar 12-hour period, with an average of 2.3 clinical units of free hydrochloric acid and an average hydrochloric acid output of 1.9 milli-equivalents.

Effect of histamine

The results following the injection of histamine were of interest. Twenty-five control patients secreted an average volume of 139 ml. of gastric juice during the 2-hour period of observation following the injection of 1 cc of histamine phosphate. The average clinical units of free hydrochloric acid was 33, and the average hydrochloric acid output was 5.7 milli-equivalents. Eighteen patients with gastric ulcer secreted an average of 207 ml. of gastric juice in the two-hour post-histamine secretion period, with an average of 19 degrees of free hydrochloric acid and an average hydrochloric acid output of 5.6 milli-equivalents. Twenty-eight patients with gastric cancer were found to have an average secretion of 106 ml. during the 2-hour period, with an average of 5.4 degrees of free hydrochloric acid and an average hydrochloric acid output of 1.2 milli-equivalents.

Interpretation of data

Because of the numerous variables associated with gastric analysis, the validity of these determinations must be scrutinized carefully. On numerous occasions the same patient was subjected to more than one 12-hour night secretion study before operation.

There was always considerable variation. Wherever obstruction of the pylorus had been present for any considerable length of time or where there was malnutrition, alkalosis, or factors that tended to produce gastric edema, there would often be a lowered output of hydrochloric acid even in the face of an active duodenal ulcer. Later on, when these factors were corrected, the output of hydrochloric acid would be often tremendous. Nevertheless, we have accepted the first determination as being authentic, since it represented the function of the stomach when the patient was first seen.

The interpretation of the findings in those patients without free hydrochloric acid was difficult. For instance, in those patients with gastric cancer, 93.8 per cent of the 12-hour secretion group and 85.7 per cent of the 2-hour secretion group following histamine had no free hydrochloric acid. Furthermore, 15 of the 33 control patients (45.5 per cent) had no free hydrochloric acid. Eight of the duodenal ulcer patients (10.5 per cent) had 12-hour secretion specimens that did not contain free hydrochloric acid. Absence of free hydrochloric acid was also noted in 38.9 per cent of our patients with gastric ulcer. In the 2-hour post-histamine secretion study, 20 per cent of the control patients with gastric ulcer had no free hydrochloric acid in their specimens. Absence of free hydrochloric acid following histamine injection was found in 3 out of 38 patients with duodenal ulcer (7.9 per cent), and in 5 out of 18 gastric ulcer subjects (27.8 per cent). We feel that these figures are best explained on the basis of replacement of the epithelium of the body of the stomach with mucus-secreting cells as as result of age and of gastritis, as well as for some of the more acute causes mentioned above.

The presence of such a large number of patients with no free hydrochloric acid among our controls and in the duodenal ulcer group makes the average level of acid secretion in our studies much lower than that reported by others. Where younger subjects were studied by others, the results of the 12-hour night secretion tests are much higher. The disparity, therefore, is much more obvious in the control patients and in those with duodenal ulcer than in the patients with gastric ulcer or gastric cancer. It does accentuate the importance of using as controls patients of the same age average as those being studied with ulcer.

Our data might be briefly summarized by stating that the 12-hour night secretion study of patients shows that the average volume in duodenal ulcer patients is approximately three times that of the control group, while the average volume of the gastric ulcer patients is approximately two and one-half times that of the control group, and the average 12-hour volume in carcinoma of the stomach patients is practically the same as the average volume in the control patients. In comparing the hydrochloric acid output of the various groups of patients, it will be noted that the figure for the duodenal ulcer group is approximately six times greater than that of the control group. The hydrochloric acid output of the gastric ulcer group is approximately three times that of the control series, while the hydrochloric acid output of the gastric carcinoma group is approximately one-third that of the control.

In the 2-hour post-histamine study we found that the average volume in the duodenal ulcer patients is approximately twice that of the control group, in the gastric ulcer patient one and one-half times that of the control group, while the average volume of the gastric cancer group is slightly less. In the 2-hour post-histamine secretion period the average hydrochloric acid output of the duodenal ulcer group is approximately three times greater than that of the control group, in the gastric ulcer patients it is practically the same, while in the gastric cancer group it is about one fifth of the control value.

Comment

It becomes apparent that the clinical experiment set up by us to aid in determining the operative procedure to use in patients with duodenal ulcer coming to surgery proved to be less clear-cut than we had originally hoped. Except in those instances where there was a local situation such as pyloric obstruction or gastric edema to account for it, we found that almost universally the 12-hour night secretion was markedly increased in patients with duodenal ulcer. This has been the observation of others. This finding would suggest that in practically all patients with duodenal ulcer there is an overaction of the cephalic mechanism or an increase in sensitivity of the glandular epithelium of the stomach to the acetylcholine mechanism.

On the other hand, there is likewise an increase in the sensitivity to histamine in most patients with duodenal ulcer. As a general rule the greater the cephalic effort, the greater this sensitivity. Nevertheless this relationship was by no means of a linear type, for certainly the secretory evidence of the increased cephalic activity did not relate either in volume of secretion or in amount of hydrochloric acid secretion to the histamine response in many instances. At times this increase in sensitivity has been so extravagant that we have felt it advisable to recommend to the patient that the antral mechanism be altered. This, in effect, means that in several instances the hormonal mechanism seemed to be the chief offender in the maintenance of the duodenal ulcer. In the majority of cases, however, both mechanisms were about evenly involved, and the decision as to the type of operation was made after the consideration of other factors as well. In the end, approximately two thirds of these patients were subjected to subdiaphragmatic vagotomy with pyloroplasty or gastrojejunostomy, and one third to subtotal gastrectomy. These patients have not been followed long enough for evaluation of the operative end result.

A similar observation of histamine sensitivity in patients with duodenal ulcer has been made by Oberhelman[13], who noted almost twice as much output of hydrochloric acid in the stomachs of patients suffering from duodenal ulcer as compared to the normal in response to the same amount of histamine. A similar observation has been made by Ihre[14].

Recently Dragstedt and his co-workers[12] have called attention to the fact that the opposite situation obtains following complete division of the vagus nerves to the stomach. They noted a considerable depression in the normal gastric secretory response to a standard dose of histamine following such an operation. In one group of patients with duodenal ulcer, there was a reduction from 17.3 milli-equivalents of hydrochloric acid before operation to 6.1 milli-equivalents after operation. In a second group of patients this reduction was from 27.0 milli-equivalents before vagotomy to 5.5 milli-equivalents after the operative procedure when the same dose of histamine phosphate was given.

From all available data, both experimental and clinical, there then is definite evidence that histamine potentiates the action of acetylcholine in the secretory mechanism of the stomach. Such an effect has been noted previously in studies on the perfused tissues of the dog's leg by Burn and Dale[15].

The two substances each play an essential part in the secretion of hydrochloric acid and a lowering of either function will be effective in lowering the amount of acid secreted.

All medical and surgical theory of duodenal ulcer has been consciously or unconsciously directed at interfering with one or both of these two mechanisms. That there is a close relationship between the action of both substances can be seen by the antagonistic action of various drugs to both of them. Such drugs are quinidine, procaine, pethidine (Demerol), atropine, and Benadryl. Since these drugs may exert their effects by competing with the local hormonal action of histamine and acetylcholine, we must also realize, therefore, that both our medical and surgical approach toward the treatment of duodenal ulcer may be directed at a single fundamental biologic function. Our study, then, may well end with the question of why patients with increase in parasympathetic activity show potentiation of the histamine effect, and what is the mechanism.

Summary and Conclusions

A series of patients with gastric and duodenal lesions was studied in order to determine the relative importance of the nervous and the hormonal mechanism in the secretory aberrations encountered in gastric analysis. Particular attention was paid to duodenal ulcer.

Virtually all patients with duodenal ulcer showed evidence of varying amounts of excessive stimulation of the cephalic mechanism.

Most patients with an increased secretion of free hydrochloric acid showed a potentiation of the action of histamine on acid secretion when compared to the normal control. There is no consistent relationship either in volume of gastric secretion or in mille-equivalents of acid secreted between the two.

At times the increased sensitivity of the gastric secretory mechanism to histamine has been so extravagant as to suggest that the antral function of the stomach was playing a more important role than the vagal.

At such times gastric resection was performed. Such clear-cut distinction was not common, however, and in most instances vagal section seemed indicated from our studies.

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A Much Maligned Drug. The day of the milk sugar placebo is past except for controlling clinical investigations, but symptomatic therapy is as important as ever. Of all the drugs at our disposal, perhaps the most valuable are phenobarbital and belladonna. The former has been very much maligned in recent years. It has been called a dangerous drug, and yet I venture to say that it is prescribed more than any other. It has been called habit-forming, but my own experience is that it is harder to get patients to continue taking it than to stop its use. Many antispasmodics have been brought out in an effort to displace belladonna, yet it still remains the most effective. In symptomatic therapy the two most common objectives are sedation and relief of smooth muscle spasm, and these two drugs fulfill the order adequately. Combinations are often used. — Yater, W. M.: Keeping Abreast of Medical Progress, Pennsylvania Medical Journal 54:425 (May) 1951.

The psyche and the soma. Neither the psyche nor the soma should hold the limelight. They comprise but halves of the same circle, without beginning or end but with varying alternating or even coincidental lengths of arc. We cannot well consider them separately. — White, P. D.: The Psyche and the Soma, Ann. Int. Med. 35:1293 (Dec.) 1951.

HIP PROSTHESIS

Its Contribution to Reconstruction Surgery of the Hip

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and

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CHARLOTTE

Of all the joints in the body the hip is perhaps the most vulnerable, and certainly the most challenging from the standpoint of treatment. This is evidenced by the large number of procedures that have been utilized over the years for reconstruction of the hip.

The evolution from a quadruped to an anthropoid and from anthropoid to the human mode of progression has involved a great strain on the hip, since it must carry double the former weight and also provide for balancing the erect body.

Anatomically the hip presents important characteristics of its own. The large epiphysis of the femoral head is entirely intra-articular and receives a poor blood supply from the vessels which enter it from the retinaculum and diaphysis. The angle which the neck of the femur makes with the shaft, perfectly adapted for conditions of health, is very liable to distortion by trauma or disease, and distortion in turn destroys the correct balance of the trunk on the lower limbs.

To replace and retain the dislocated hip; to re-establish correct relations between an ill formed femoral head and an ill developed acetabulum; to attach a displaced epiphysis or mend a broken neck of the femur, maintaining a correct angle with the shaft of the bone; to remake the joint which has been destroyed by inflammation—these are some of the major problems which are encountered in reconstruction surgery of the hip.

History

The possibility of substituting some type of prosthesis, including the femoral head, for an articular extremity is not new. Credit for the first systematized attempt to replace a bony substance should be given to Delbet[1], who utilized a prosthesis of reinforced rubber in 7 cases in 1919. In one of these cases the humerus was replaced by a prosthesis following resection for a sarcoma. In 1926

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Robineau[2] reported insertion of a prosthesis following resection of a benign tumor in the lower end of the humerus. This prosthesis was constructed of rubber reinforced with steel. The following year he performed a similar procedure, utilizing a prosthesis in the upper third of the femur. In the case of the humerus the joint remained stable and functional, and the prosthesis was well tolerated. However, in the case of the femur the artificial insert proved quite defective, and the entire procedure broke down within a year and a half.

Hey-Groves[3] in 1927 replaced an inflamed and ankylosed femoral head with a large ivory nail, which was inserted through the femoral neck into the shaft. In 1929 Bohlman[4] experimented with replacement of the femoral head, and since 1940 he has reported 8 clinical cases in which a vitallium device was used. Moore and Bohlman[4], working together in 1943, resected a large giant-cell tumor of the upper half of the femur and replaced the bone with a large vitallium prosthesis. An encouraging result was obtained, but the patient died 20 months later of a cardiac condition.

From 1942 to 1946, prostheses of stainless steel were used temporarily in 2 and definitively in 5 cases. In all these cases extensive bony resection had been necessary in the treatment of malignant tumors. To obviate bony rarefaction and fracture at the seat of fixation, grips with blades fixed by means of screw bolts were used. The metallic head was of the same dimension as the head removed, and retention was obtained by suturing the capsule.

In 1946 Hudack[5], in New York, experimenting with dogs, used a prosthesis with a large nail-fixation seated in the medullary canal of the upper end of the humerus. One year later Delitala, of the Rizzoli Institute at the University of Bologna, reported attempts at or with prosthetic replacements.

In 1947 Mellen and Phalan[6], in America, reported 4 cases in which an acrylic prosthesis was used to replace the distal portion of the humerus. In the same year the Judet brothers[7] in Paris, impressed by the absence of adhesions and connective tissue formation in the use of a polymethacrylate prosthesis by the otolaryngologists, decided on further experimentation and the possibility of using this material in the hip joint. By animal experimentation Virenquen of Paris has shown that in muscles and in peritoneum an acrylic resin gives rise to only temporary reaction, and he concluded that the absence of tissue reaction was an established fact. We now have reports by the Judet brothers (1951) on the use of acrylic prosthesis in 400 cases observed over periods of more than one to four years. At present approximately 100 cases have been reported in the literature in this country, and by personal communication and conversation we know of several hundred other cases. Perhaps over 3,000 operative cases have been reported from France and the surrounding European countries.

Conditions Requiring Reconstruction of the Hip

Among the challenging problems to be met in reconstruction surgery of the hip associated with disease at some age in life are: (1) Legg-Calvé-Perthes disease with subsequent traumatic arthritis, usually appearing in early adult life; (2) unreduced or unsatisfactory end results, congenitally dislocated hips; (3) coxa vara of adolescence; (4) slipped upper femoral epiphyses which have not fared well; (5) osteoarthritis of the hip, sometimes referred to as arthritis deformans or morbus coxae senilis; (6) Marie-Strumpell arthritis; (7) old septic hip; (8) tumor of the femoral head or neck; (9) long-standing congenital dislocations of the hip.

In the field of trauma to the hip where other measures have failed are: (1) intracapsular fracture of the hip with resultant necrosis of the head of the femur or nonunion in the neck; (2) fracture-dislocations of the head of the femur when aseptic necrosis ensues.

Surgical Procedures Employed

Surgical procedures designed for treatment of the above lesions, some of which have met with varying degrees of success, have been: (1) denervation for pain; (2) osteotomy to relieve stress; (3) bone-grafting; (4) pseudoarthrosis; (5) arthrodesis; (6) arthroplasty. These procedures are designed primarily to relieve pain, correct deformity, re-establish stability, restore motion, and repair the ununited fracture of the femoral neck.

1. Since pain is a common symptom, *denervation* of the hip has been advocated. The only disappointment has been the short duration of its effect. It is indicated chiefly for

the elderly patient who cannot undergo severe or more extensive surgery.

2. *Osteotomy* of the simple corrective type, or displacement osteotomy of the high subtrochanteric or low subtrochanteric type, have been used in the redistribution of stresses. The major objection is the prolonged period of immobilization required, which is unsuitable for the older patient. This objection, together with the possibility of jeopardizing knee motion, has greatly limited the use of this procedure.

3. *Bone-grafting* has been used in many cases and has afforded some satisfactory results in non-united fractures of the femoral neck. There is always the danger that this union may not occur because of the avascular condition in the femoral head.

4. In England Girdlestone[8] has proposed a *pseudoarthrosis operation* to increase motion. This procedure has met with some success. Shortening of the extremity, which increases weight-bearing on the other side, is a marked drawback, as imbalance contributes to low back pain.

5. *Arthrodesis* is also considered a practical procedure, and is quite satisfactory in selected cases. Fusion is not too easy to obtain in all cases, however, and a long period of immobilization must always be anticipated. The latter drawback and the consequent endangering of motion of the knee joint make this procedure difficult for older people. Back pain is a factor here also.

6. Many surgeons have urged the use of an *arthroplasty procedure* with the interposition of soft tissue or an innocuous metal such as a Smith-Petersen cup. The failures of arthroplasties lie to a great extent in the severe load that the hip joint must carry on the ill-fitting vitallium cup. Another obstacle encountered is the difficulty of application due to gross deformity of the femoral head and neck. Lastly, there is the possibility that interference with the blood supply will result in absorption of the head and neck. Postoperative treatment is again quite protracted, which makes this also a difficult and hazardous procedure for older patients.

7. In the treatment of fractures of the femoral neck with non-union, a multitude of reconstruction procedures have been employed. The most classic procedures require sacrifice of the head and insertion of the neck into the cavity of the acetabulum, as described by Whitman in 1924. Modifications have been described by Lucke, Colonna, Brackett, and others. While some are of value, these methods fail because the joint is not satisfactorily reconstructed from the standpoint of good mechanics. The femoral neck is considerably smaller than the acetabulum with which it articulates, making it quite unstable.

Types of Prostheses

At the recent meeting of the Academy of Orthopedic Surgeons in Chicago, approximately 60 different types of femoral prostheses were shown or reported. All are variations of the three main types. They are usually made out of metal or plastic. They may fit within the medullary shaft; they may be screwed to the side of the femur by a plate, such as the Jaenichen type; they may fit down the femoral neck and be held in place by a nail, as advocated by Judet; or they may sit as a large sleeve over the entire shaft of the femur, as the early prostheses were designed to do when malignant tumors were resected from the upper third of the femoral shaft. Lastly, they may be a combination of any of the three mentioned, and these probably represent the major portion of all the prostheses tendered to date. The most distinguishing feature of the Judet prosthesis is the fact that it is made from a plastic and not from a metal.

Operative Technique

The operative technique employed in these cases has been by the Smith-Petersen antero-femoral approach, exposing the anterior aspect of the hip joint. Judet often approaches the joint by a small antero-femoral incision, and is able to dislocate the head without too much difficulty, and apply a prosthesis. In some instances he has been known to complete the procedure in less than 40 minutes. We have leaned to the larger exposure, have done extensive capsulectomies and dissections about the neck, and reconstructed most of the acetabulae. This is especially advantageous in the arthritic cases. A special reamer and instruments designed by Judet facilitate the application of the prosthesis and act of fitting it into the newly reconstructed acetabulum. In some instances it has been necessary to section the adductor attachments in an effort to prevent dislocation and, at the same time, bring the hip into better position. Postoperatively the foot is carried in a small plaster of Paris boot in internal rotation, with a bar across the back of the boot for fixation.

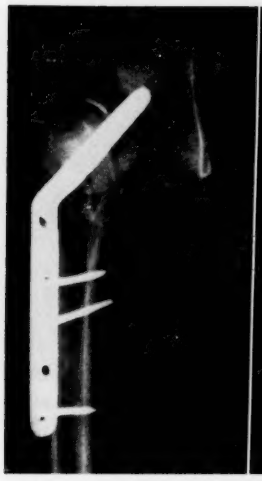

Fig. 1. Fracture-dislocation of the neck of the femur, with blade plate in the acetabulum and head dislocated.

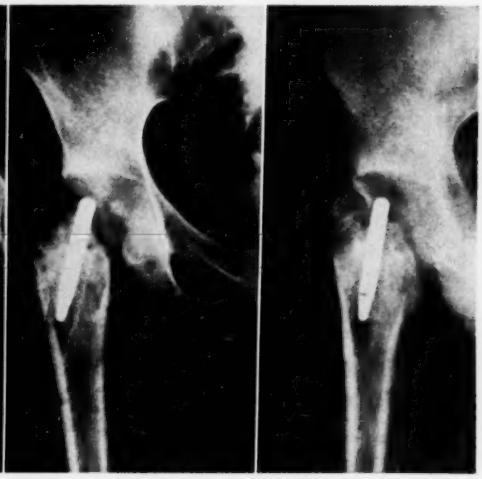

Fig. 2. Following removal of blade plate and head of femur and replacement by Judet prosthesis.

Illustrative Cases

Case 1

A 32 year old Negro woman sustained a fractured left hip following an automobile accident on December 1, 1950. She was admitted to a hospital and open operation and the insertion of a blade plate were done. She was referred on March 6, 1951, because of the unsuccessful result of the surgery.

Roentgenograms (see figure 1) showed a blade plate impinging in the acetabulum, with the fractured neck and head apparently dislocated and out of the joint. Clinically the patient was unable to bear weight on the extremity, and had practically no motion of the hip joint, with rather marked swelling and edema of the joint.

Operation was undertaken on March 8, 1951. There was practically no neck remaining, and a modified type of Colonna procedure was undertaken, with the application of a Judet prosthesis to the remaining neck and trochanter. Some difficulty was found in maintaining the head in the acetabulum, but on April 14, 1951, the patient was dismissed from the hospital in a double hip spica, which was later removed on June 11, 1951. Satisfactory retention of the head in the acetabulum resulted. The patient was last seen on May 19, 1952, walking well but with a slight limp, using no crutches or cane, and with almost normal range of hip motion.

Case 2

A Negro woman, aged 40, reported to the office on October 24, 1951, walking on crutches. She had had an operation on her right hip for chronic arthritis three months before. An arthroplasty had been performed, and she had been told that the cup had slipped out.

Clinical examination disclosed marked swelling about the hip and the entire right lower extremity. There was very little hip motion present, and the patient could not bear weight on the extremity. The roentgenograms revealed a dislocated right hip with a dislocated Smith-Petersen cup. A large amount of callus was present around the hip joint (figure 3).

The patient was admitted to the hospital and an operation performed on November 2, 1951. The cup was removed and a Judet head placed upon the neck after removal of the head and the large amount of extra callus. Sectioning of the adductor tendon attachments was also done. The patient was dismissed from the hospital on November 21, 1951, using crutches.

She reported to the office on February 9, 1952. Although she still had some limitation of motion about the hip joint, she was walking well and without pain (figure 4).

Review of 26 Cases

The results of 26 hip arthroplasties, in 25 of which a Judet type of prosthesis either of stainless steel or plastic was used, are summarized below. In 1 case an Eicher type of prosthesis was used.

Eight of the patients in the series were men and 18 were women. Ages varied from 23 to 78, with a mean of approximately 41 years.

Indications for the surgical procedure varied. Traumatic arthritis was the etiology in 7 cases. In 2 of these cases direct trauma was the precipitating cause, 1 case being the result of a bullet wound in the left hip. Fracture-dislocation or dislocation of the hip had occurred in 5 cases, with resultant aseptic necrosis of the femoral head. Non-union of the femoral neck was the pathologic condition in 5 cases. In 3 of these aseptic necrosis of the head of the femur had developed. Marie-Strumpell arthritis with spontaneous fusion of the hips had occurred in 1 case;

Fig. 3. Smith-Petersen attempted arthroplasty of the hip with dislocation of the hip and dislocation of the prosthesis.

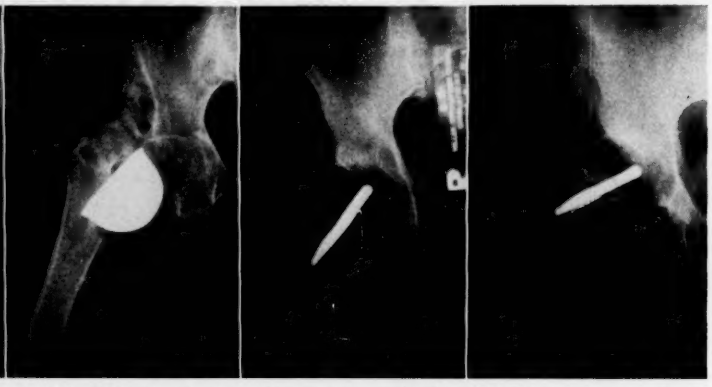

Fig. 4. Removal of Smith-Petersen cup, reduction of dislocation, removal of excess bone, and introduction of Judet prosthesis.

rheumatoid arthritis, with either painful hips or ankylosis of one or both hips, in 3 cases. Septic hip, of approximately 10 years' duration, was the source of 2 cases. An attempt was made to insert a prosthesis to increase or improve motion.

Generalized osteoarthritis had occurred in 3 cases, slipped femoral epiphysis contributed 2 cases, and Legg-Perthes disease 1 case. In 1 case, dislocation of the hip had followed a vitallium cup arthroplasty and absorption of the femoral neck.

Complicating and aggravating factors in this series of cases were: bilateral fusion of the hip in 5 cases, bilateral fusion of the knees in 1 case, and flexion contracture of both knees in 2 cases.

The presenting symptom in most all of the cases was a painful joint with limitation of motion. This syndrome occurred in 21 of the cases. In 1 case pain was present in spite of almost full range of motion; this, incidentally, was in a recent dislocation of the involved hip. Four patients had no pain, but had insecure fibrous ankylosis. Flexion-adduction deformity was present in 8 cases. Shortening of one leg, varying from ½ to 2¾ inches, was noted in 11 cases. A persistent limited external rotation deformity was present in 1 case.

The follow-up period in this series of cases has been from two to 13 months. The clinical end result was considered to be excellent in 3 cases, good in 13 cases, fair in 5 cases, and poor in 5 cases. Clinical evaluation was based upon (1) the amount of motion obtained; (2) the presence or absence of pain, and (3) the stability of the hip — and these are essentially the bases of criteria of all hip surgery.

Complications

There were 4 postoperative dislocations of the prosthesis. In 3 cases, there was marked increase of callous deposit, chiefly in the anterior-superior portion of the hip. This may or may not have been associated with the osteotomized trochanter. All patients walked postoperatively with a limp or a definite Trendelenburg gait, in one instance despite a functional gluteus medius. In 2 cases the prosthesis was heard to "squeak" *in situ*, which apparently did not annoy the patient. Footdrop was present in 1 case, a supracondylar fracture of the femur occurred in 1 case, and a toxic psychosis developed in 1 case. Progressive shortening of the leg has been noted in 1 case, flexion-adduction deformity recurred in 2 cases, and non-union of the trochanter at the site of osteotomy was apparent in 3 cases. It is noteworthy that not one mortality occurred in the 26 cases reported here, and this has been the experience generally noted in this country and abroad.

Conclusion

At present these end results do not warrant the consideration of the Judet prosthesis as a pre-eminent tool in the armamentarium of surgical approaches to diseases of the hip. While we are hopeful that the "ceiling is lifting" in regard to advances in reconstruction surgery of the hip, it is still too early to draw dogmatic conclusions concerning the over-all value of the Judet or any other type of the many hip prostheses now

available. Just now it is most important that we undertake to classify the type of prosthesis indicated in each particular situation.

As stated some years ago by Speed, fracture of the hip is still the unsolved fracture. Let us hope, however, that the time may soon arrive when a discriminating student may be able to determine which classification or type of acutely fractured hip can be labelled as a prospect for pin fixation primarily, or for immediate insertion of a prosthesis. When and if this time arrives, a formidable clinical and economic hurdle for the patient will have been passed.

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Paraplegia—In rehabilitation, we must teach not only the tangibles but the intangibles—not by text, but by example. In the first lecture to the freshman class at New York University College of Medicine this year, I made this statement, which I deeply believe: "If you come out of your four years in this Department with but one thing, I shall feel your time has been well spent. That one thing is this: If you can get the same deep, inner satisfaction from teaching an old, battered hemiplegic, who has been relegated to a life in bed and wheelchair, to walk again and to take care of his daily needs, that you now get from making the diagnosis of aleukemia, histoplasmosis, or some other obscure condition, then your time will have been well spent, for 75 per cent of your patients will be individuals suffering from chronic disease, disability or related problems. If you cannot get this satisfaction from providing them with a life of dignity and at least some degree of self-sufficiency, much of your time in practice, instead of being stimulating to you, will be boring, and under the circumstances you cannot practice good medicine.

There is much in the epidemiology of tuberculosis which we do not understand, and the disease has clinical aspects which we cannot explain. Its treatment is no more static now than it was thirty years ago, and it is just as true today as it was then that everything that is new is not necessarily true or good.—Charles Cameron, M.D., The Lancet (London), April 14, 1951.

RURAL MEDICAL CARE IN NORTH CAROLINA

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NORTH WILKESBORO

It has been said that necessity is the mother of invention. This trite but true statement, it seems to me, applies as well to the development of economic, social, and health movements as to the invention of machines and the myriad material gadgets that have been developed in this age of technology.

Origin and Development of the North Carolina Better Health Program

The statistics on draft rejections of our young men during World War II were the signal for a fight for improvement in health conditions throughout North Carolina. Since 1943 the health program, which was initiated by leaders in the medical profession in the state, has taken root and grown rapidly. Whether the statistics told the whole story of the staggering rejection rate is beside the point; time will not permit an analysis. Suffice it to say that they gave a rude awakening and spurred the forces interested in better health in our state to such heated action that the momentum of the drive has scarcely abated to this day.

The doctors who initiated the movement for better health in North Carolina were armed with the draft rejection statistics: white—40.9 per cent; colored—60.6 per cent. At the same time they called attention to the important fact that the rejection rate among the boys from our North Carolina orphanages was very low. The acceptance rate among this group was 98.6 per cent. This rate was explained by the fact that the boys in the orphanages had better medical care, lived under more sanitary and hygienic conditions, and were better fed.

Further investigation by the doctors disclosed that North Carolina ranked low among the states in infant and maternal mortality, in doctors per thousand population, and in the number of hospital beds per thousand population, 33 counties having no hospital beds at all.

The Poe Commission

This group of physicians appealed to Governor Broughton for help in the improvement

Read before the Seventh Annual National Rural Health Conference, Denver, Colorado, February 29, 1952.

of health conditions in North Carolina. In 1944 he set up the State Hospital and Medical Care Commission, composed of 50 leaders in agriculture, labor, industry, health, medicine, and other fields, to study health conditions in and out of the state. This Commission was later called the Poe Commission, after the chairman, Dr. Clarence Poe, editor of the *Progressive Farmer*.

After a year's study of health conditions in the state and nation, and after consulting with health experts in and out of the state, the Poe Commission made its report to the Governor, who presented it to the 1945 session of the General Assembly. The report stressed three objectives: (1) more hospitals, (2) more doctors, and (3) more voluntary prepaid insurance.

On recommendation of Governor Broughton's successor, Governor R. Gregg Cherry, the 1945 General Assembly endorsed the program and passed legislation supporting it. The bill provided for: (1) appointment of a 20 member permanent state agency to be known as the North Carolina Medical Care Commission, with an appropriation to finance the Commission's work from 1945 to 1947; (2) the adoption of the principle of contributions toward the hospitalization of indigents ($1.00 per day per patient, totalling $50,000 for 1945-1947); (3) an appropriation of $55,000 for the establishment of a medical education loan fund for students who would agree to do rural practice for four years following their internship; (4) a county-by-county study of the state to determine the need for state aid in the construction and enlargement of local hospitals, to draw up a statewide plan for the construction of hospitals and health centers which might be required in order to comply with any federal laws, and to receive and administer any funds provided by Congress for such purpose; (5) expansion of the University of North Carolina Medical School to four years and construction of a 400 bed teaching hospital; (6) a study of the problem of medical training for Negroes.

Program of the Medical Care Commission

Subcommittees were immediately set up within the Medical Care Commission to study special health problems. A National Survey Committee composed of experts in education and medicine was set up also under the provisions of the law. After a careful survey had been made, the majority report of this committee endorsed all parts of the health program and recommended that the four year medical school be located on the University campus at Chapel Hill.

The Hill-Burton Bill (Hospital Survey and Construction Act) was passed by Congress in August, 1946, and North Carolina became eligible to receive approximately 17 million dollars of federal money over a five year period. Every dollar of this amount was to be matched by two dollars of state and county money, for the construction of hospitals and health centers. The legislature of 1947 and 1949 appropriated approximately 20 million dollars of state funds to be used over a period of five years. The North Carolina state plan, the first to be approved by the federal government, provided that local funds would be required to supplement state and federal funds. Counties would be aided by the state on a basis of need, varying from 10 to 50 per cent. The 1947 General Assembly passed the Hospital Licensing Act for hospitals receiving federal and state aid, and also made students of dentistry, nursing, and pharmacy eligible for the students' loan fund.

To date, the Medical Care Commission program has implemented the State Better Health Program by the construction of 60 hospitals, 19 health centers, and 15 nursing homes. Three thousand nine hundred and seven new hospital beds have been provided for the state.

The Good Health Association

Another great lay organization which had much to do with the organized movement for better health in North Carolina was the North Carolina Good Health Association, organized in 1945. This organization consisted of over 200 leading citizens, representing the professions, industry, labor, agriculture, health groups, and others interested in the better health of our state. The intensive educational campaign conducted by this organization was largely responsible, not only for the passage of legislation necessary to the health program, but also for the success of the program of the Medical Care Commission in North Carolina. The campaign of the North Carolina Good Health Association was effectively conducted by Kay Kyser, through newspapers, pamphlets, the radio, movies, posters and the like.

The State Board of Health

Another great health organization which through the years has conducted a fine pro-

gram in the interest of better health in North Carolina is the State Board of Health. The Medical Society of the State of North Carolina was responsible for the birth of the State Board of Health in 1887. The Society succeeded that year in getting the legislature to appropriate $100 for the operation of the Department of Health during the first year. Today several millions of dollars are spent yearly in connection with its program. Every county in North Carolina is served either by a county or a district health department. The State Department of Public Health, along with the local county health units, has laid well the foundation for the rural health program.

Approaches to the Nation's Rural Health Problems

State and national programs

During the past 30 or 40 years rural health and medical service over the entire United States has lagged far behind that of urban communities, and rural people have not benefited from developments in medicine and health as they deserved. The chief reasons for this condition have been the shortage of doctors and the lack of clinical and hospital facilities to attract doctors and specialists to rural communities. Economic and social conditions have played an important part in this situation. So have lack of transportation facilities, telephones and electricity, good schools, churches, recreation facilities, and other advantages enjoyed by urban citizens. Sanitary, hygienic, and nutritional conditions are not so good in rural as in urban communities.

These conditions are at last being partially corrected—at least in regard to transportation, electrification, telephones, and clinic and hospital facilities, giving hope to our rural people for a higher standard of living.

So much for the health programs designed for blanket coverage of rural people. These programs, of course, are necessary and serve well to a certain degree. However, they are not the final answer to fundamental rural health problems. Furthermore, they tend to become paternalistic, in some instances undemocratic, and finally dictatorial.

Program of the Rural Health Committee (A.M.A.)

Let us now consider an entirely different and more effectual approach to our rural health problem. I refer to the program of the Rural Health Committee, which is the antithesis of the national and state approach to health and medical care. Here we speak the language of the common man and make an individual and grass roots approach to his health problems. It is not the desire of the medical profession to hand down just another program nor to dominate it. Rather, this program is designed to help the individual in thinking and planning intelligently and systematically for more healthful living. It is predicated on the fact that every citizen in a community has a definite responsibility in improving the health of his community. The idea is conceived in a spirit of unselfish devotion to the common good and nurtured in an objective, active, and cooperative program.

As you know, the Rural Health Committee of the American Medical Association resulted from the interest of certain farm groups who appealed to the medical profession for cooperation in an effort to solve rural health problems. Many of you have attended the annual National Rural Health Conferences since 1946, the year in which the first was held, and know something of the program as it has developed. You are aware of the spirit of cooperation which has existed between medical, health, farm groups, and others, and the grass roots approach, through health councils, which has been adopted. You know of Dr. Crocket's philosophy which he has stated so well: "Everything directly or indirectly affecting our daily lives affects our health."

North Carolina Rural Health Committee

The Rural Health Committee of the North Carolina Medical Society was appointed in 1946. This committee, of which I had the honor to be the first chairman, floundered about for some time in an attempt to determine what its function should be and where to begin work. After several months we realized that here was a Herculean task. At the same time we were not discouraged, and we felt that the project gave promise of real and worthwhile accomplishments in the field of health.

In 1947 the committee decided to ask the North Carolina Good Health Association, which had completed its program of education in the interest of legislation recommended by the North Carolina Medical Care Commission, to assist in the program. This they agreed to do, and through their very

efficient secretary, contributed largely to the success of our first annual State Rural Health Conference in February 1948.

Organization of Rural Health Councils

It became apparent early in the program of the committee that rural health problems could not be solved at the state and national level. It was decided, therefore, that the activities of the committee should center chiefly in the organization of the Rural Health Councils, as advocated by the Rural Health Committee of the A. M. A. The committee thought best to begin the program in a limited way, with two counties in the west and two in the east. It was felt that we must gain experience and develop patterns before trying to put the program on a statewide basis. It was further decided that a field worker well trained in health and organizational work was a *must* in the development of the Rural Health Councils. No doctor nor groups of doctors had the time to do the footwork and make the contacts necessary to assure ultimate success. It was also considered essential that the first step in organizing a Council should be to consult representatives of the local medical society and health department as to the feasibility of the project.

These and many other contacts were made by doctors. This procedure was followed in each of the counties in which councils have been organized.

Our committee was fortunate in selecting a field worker who was eminently fitted by training, experience, and personality for directing the organization of these councils. Miss Charlotte Rickman began work in the organization of the Alexander County Rural Health Council in October, 1948. She holds an A. B. degree from George Washington University and an M. A. degree in Community Organization for Health Education from the School of Public Health of the University of North Carolina. Furthermore, she comes from a family of doctors. She has done a grand job in securing the cooperation of all health groups in the counties in which she has worked. The response on the part of the people has been wonderful.

The projects are financed entirely by the North Carolina Medical Society.

Objectives and techniques

Let us try now to define a Rural Health Council. To me a Rural Health Council represents an organized, cooperative, and coordinated effort on the part of the individuals and groups to solve, on the local level, problems relating to the health of the community. It is a coordinated planning body, not a service agency. The objective is to bring together all the health resources of a community and use these to the best interest of the community. This implies an integrated plan embracing all the agencies such as agriculture, health (voluntary and involuntary), home economics, civic, and lay organizations, in one unified effort to work with people and not over them. It is important to make wide contacts and do much listening in order to help the people work out their problems and to sound out the social and economic conditions in connection with health problems.

It is important to educate rural people to the fact that there is a difference, as pointed out by Mr. Aubrey Cates, between medical service, which is purchasable, and health, which is not. Health programs imply many things that are within the realm of individual education and accomplishments, such as personal hygiene, proper nutrition, sanitation, proper health facilities for the prevention of communicable diseases, clinics, and accident prevention at home and on the highways.

In the development of Rural Health Councils in North Carolina, no definite plans or clear-cut patterns have been evolved as was hoped in the beginning. However, much valuable experience has been gained. The approach to the development of Rural Health Councils varies widely in different communities. It is evident that the consultant in such a movement, therefore, needs to be a resourceful and versatile thinker. Of prime importance is making clear the fact that the rural health program is not just another program being handed down, that no special interests are being served, and that the medical profession does not propose to dominate the organization. On the contrary, it should be pointed out that the program calls for people to do their own thinking and planning, and evolve their own programs for correcting whatever evils lie in the path to higher planes of living.

The Rural Health Council, therefore, represents, of necessity, a grass roots or individual approach to better health, reaching on up to the community, the county, and finally to state and national levels. It is a community organization which combines

the forces interested in improving local health conditions into one agency. This idea is conceived in a democratic spirit and nurtured in an atmosphere of freedom.

After making contact with the health forces in the county in which a Rural Health Council is considered as mentioned above, leaders in the different communities are called together, guiding principles are drawn up, a discussion of the needs is conducted, and finally an objective program is arranged. A health survey is needed early in the program in order to determine the various health forces at work in the community and evaluate the work already accomplished. The health needs of the community are considered, and a program is gradually evolved. These programs vary widely according to local needs, and may point up any health problem from baby clinic to the implementation of a hospital construction project.

The first project in the work of our first Rural Health Council, in Alexander County, was to implement the program of the local hospital, which was already underway. Our consultant helped direct auction sales, arranged for benefit movies, scrap drives, and other money-raising activities, in order to procure the community's share of construction funds. Other projects such as nutrition clinics and maternal welfare clinics have been gotten underway since. Several Councils have been organized in North Carolina, each with a different approach, with different objectives, and even under different names, but all interested in health education. Therefore, no definite patterns for Rural Health Councils has been developed.

Public response

Public response has been encouraging. We have had complete cooperation on the part of the local medical societies and local health forces, as well as from the State Health Council and the North Carolina State Health Department. Better understanding has resulted, and many of the grudges, grievances, and jealousies between the medical and health groups have disappeared. After all, are we not striving for the same goal?

Many more counties have appealed to the State Rural Health Committee for the organization of councils, but on account of lack of personnel, we have not been able to respond. It is hoped that in the very near future we can have more health educators helping our Rural Health Committee in promoting the development of more councils. Because of the many contacts that have been made and the prodigious amount of work necessary in organizing a council, the growth of the program is slow. This, I think, is a healthy situation. We try to keep ever in mind the "eleven point program" evolved by the National Rural Health Committee.

Here I should like to recognize the splendid rural health demonstration that Dr. George Bond, chairman of the Rural Health Committee of the North Carolina State Medical Society, has made, singlehanded, in his own strictly rural area. He has so given himself to the promotion of better health and medical service to his people that he has gained the respect of his community, as a physician and as a citizen, and has had the sympathetic cooperation of the community in establishing a model rural health hospital service. As chairman of the Rural Health Committee, Dr. Bond has the additional advantage of a nine member advisory committee, representing mainly farm organizations. The medical profession of North Carolina is very proud of George Bond and his record.

Results of the North Carolina Good Health Program

The tangible results of the better health program in North Carolina are everywhere in evidence in the form of new hospitals, new health department buildings, a new four year medical school, many Rural Health Councils, a hospital for spastics, more tuberculosis sanitorium beds, mental health societies and clinics, a cancer control department in the State Board of Health, cancer detection and diagnostic centers, a home for incurable indigent cancer patients, an Alcoholic Rehabilitation Program and a home for alcoholics, an expanded school of public health, a State Health Council, and an active school health program. There is more evidence of health consciousness in our state than ever before, and more effective medical and health services. There is also in evidence greatly accelerated activity on the part of certain committees of the State Medical Society. I should like to mention the Committees on Rural Health and Education, Cancer, Legislation, Mental Hygiene, Emergency Medical Service, Chronic Illnesses, Services and Fees for Hometown Medical Care of Veterans, and many more.

Another health service which has been given great emphasis in our state is Blue

Shield and Blue Cross prepaid health and hospital insurance. The State Medical Committee on Prepaid Medical Service Insurance Plan has just completed a four year job in working out a comprehensive Blue Shield plan which will be placed on the market soon by the Hospital Saving Association, a Blue Cross—Blue Shield plan which our medical Society sponsored. A Blue Cross companion contract will be offered with it. One of our main objectives has been to broaden the use of this service. Particular attention is being given at the present to an attempt to bring more and more of the rural and low income and farm people into the possession of prepaid Blue Shield and Blue Cross insurance.

The intangible results in the Rural Health Program, it seems to me, are more important even than the tangible results. People who are really interested in better health conditions feel subconsciously that here is a wholesome, unselfish and all-embracing program, with unlimited possibilities for the good of the community. There is a changed attitude toward health matters that brings them down to an individual level and stimulates a wholesome and democratic approach to these common problems. To me the attitude of a person is everything. If his general attitude is right, a host of apparent shortcomings in his life immediately fade into insignificance, and he stands forth a free man. "As he thinketh in his heart, so is he." It is my humble opinion that in the realm of the intangible rests the soul and fundamental strength of the Rural Health Program. Let us foster this thought in promoting the program. It will give us strength in the hours of discouragement. The seeds that are presently being sown will slowly come to fruition, and we shall see sound development and a demonstration of democracy in its truest form—in action.

Conclusion

To the farm people, we of the medical profession, say, "Here's our hands in this great program which you have initiated for improving rural health conditions. It is democratic and provocative of thinking which makes for the preservation of our freedom. It is my feeling, that in the minds and hearts of our farm people resides the last truly great flame and bulwark of liberty. They live close to the soil and nature. They know the inestimable value of our natural resources and their direct bearing on our health. Like the farmers of Lexington who long ago fired the first shots in our fight for freedom, the farm people of today will supply the means for staying the hand of the oppressor. We pledge them our support.

HISTOPLASMIN SENSITIVITY IN SELECTED AREAS OF NORTH CAROLINA WITH REPORT OF A CASE OF PROBABLE HISTOPLASMOSIS IN A CHILD

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The relationship between histoplasmin skin sensitivity and histoplasmosis is still poorly defined. Palmer[1], however, feels that the high incidence of pulmonary calcification in tuberculin-negative persons is due not to tuberculosis, but probably to histoplasmosis or an immunologically related fungus. If it is due to histoplasmosis, then there is a benign, self-limited or subclinical form of the disease which seems to be quite prevalent in the central and eastern parts of the United States. This view is suggested by Christie and Peterson[2] in a study of 181 Tennessee children, of whom 70 per cent reacted to histoplasmin. Fifty per cent showed pulmonary calcification, but were negative to tuberculin. Other known forms of histoplasmosis are the chronic, disseminated type and the acute, fatal type.

Incidence and Geographic Distribution

Christie[3] states that 30 per cent of the known cases of histoplasmosis have been reported in children. Prior to 1950, North Carolina was regarded as an area of low histoplasmin sensitivity. Palmer[4] in 1945 tested 241 student nurses from the states of North Carolina, South Carolina, Georgia and Florida, and found that only 2.8 per cent were reactive to broth filtrate *Histoplasma capsulatum* (histoplasmin).

Read before the Section on Pediatrics, Medical Society of the State of North Carolina, Pinehurst, May 7, 1952.

* From the North Carolina State Board of Health, Raleigh, North Carolina.

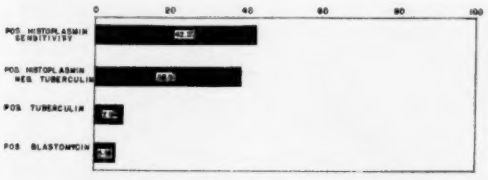

Fig. 1. Percentage of histoplasmin and other antigen* sensitivity in 203 school children: Hyde County, 1950.**

*Antigens: Tuberculin (PPD) and blastomycin.

**Negro and white children, aged 12-19; average age 14.5.

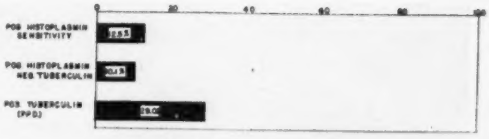

Fig. 2. Percentage of histoplasmin* and tuberculin sensitivity in 774 high school children: Northeastern counties† of North Carolina, 1952.**

*Lilly's histoplasmin (1:100).

**Negroes and whites aged 12-19; average age 15.5.

†Pasquotank, Perquimans, Camden, Currituck, and Chowan.

A recent publication[5] showed that North Carolina has a higher incidence of sensitivity to histoplasmin than was formerly thought, and that there are marked sectional differences. There were areas of the state that showed an increase in pulmonary calcification in negative reactors to tuberculin. The areas of highest histoplasmin sensitivity are the eastern seaboard and, in particular, the northeastern areas of the state. The western mountain area had also a high number of positive reactors, but the Piedmont area had a low percentage.

Furcolow[6] found similar geographic differences in histoplasmin sensitivity rates in Kansas and Missouri. He also found persons living in a rural environment more likely to show sensitivity than those living in urban environment. *Histoplasma capsulatum* has been isolated from the soil by Emmons[7], and has been found in animals[8] closely associated with humans, such as the dog, rat, cat, and horse. It has further been shown that this fungus is particularly dependent upon moisture for its growth. Furcolow[9] found in a study of Kansas and Missouri that the counties having the highest rainfall have the highest percentage of positive reactors to histoplasmin. As a parallel, the eastern seaboard and western North Carolina have the highest rainfall in the state. The soil of the eastern seaboard region is in general a fine, silty loam, highly fertile and retentive of moisture. In a survey of Beaufort county[5], it was found that 75 per cent of 147 adult persons with pulmonary calcifications reacted to histoplasmin, while 43 per cent of 388 persons selected at random in an adjoining county reacted to it. In view of this fact, it was of interest to survey histoplasmin sensitivity in school children in this area.

Material and Technique

Fresh dilutions (1:1000) of histoplasmin (lot H-40), obtained from Dr. Arden Howell of the U. S. Public Health Service Mycological Laboratory, and PPD of an intermediate strength (0.0001 mg. contained in 0.1 cc.) were used in a Hyde County survey. Histoplasmin (Lilly), in a dilution of 1:1000, and PPD of the same strength as above were used in a second survey. One-tenth of a cubic centimeter was injected intracutaneously and the reaction read in 48 hours. Induration of more than 5 mm. was considered a positive reaction.

First Survey

In Hyde County 203 school children with an average age of 14.5 years were tested. Of these, 42 per cent showed sensitivity to histoplasmin; 7.9 per cent had a positive tuberculin reaction, and 5.9 per cent a positive blastomycin reaction; 38.9 per cent showed a positive histoplasmin and a negative tuberculin reaction. Both Negro and white children were tested and no racial difference was found. (fig. 1).

Second Survey

High School students between the ages of 13 and 19 from Pasquotank, Perquimans, Camden, Currituck, and Chowan Counties were tested for skin sensitivity to histoplasmin and PPD. Twelve and five-tenths per cent of these showed positive histoplasmin sensitivity; 10.1 per cent were positive to histoplasmin and negative to tuberculin. Twenty-nine per cent were positive to tuberculin (fig. 2).

It is possible that the lower histoplasmin sensitivity was due to the different antigen used.

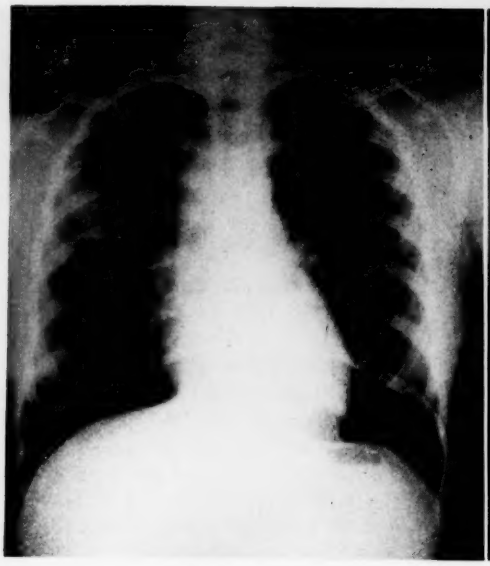

Figure 3

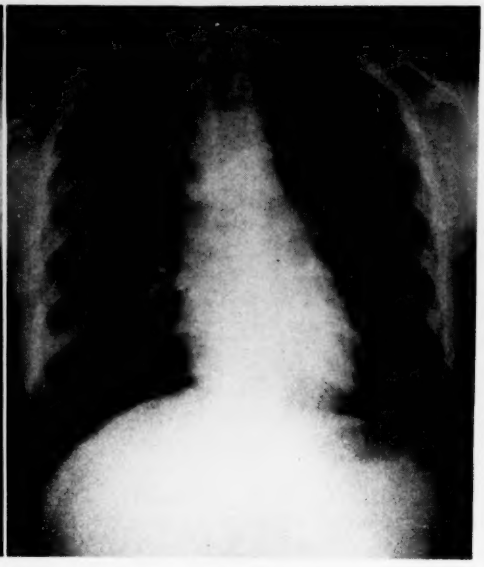

Figure 4

Report of a Case

A 10½ year old white girl, a life-time resident of Pasquotank county, was seen in the office of one of us (W.H.D.) in October, 1950, because of attacks of dizziness and profuse perspiration of one week's duration, and frontal headache, irritability, and loss of weight and appetite of one month's duration. The family history was noncontributory. The past history disclosed that she had been born of a normal pregnancy. Her diet, supplemented with the usual vitamins, was adequate; development was normal. She had had enuresis to the present time. She had had pertussis at 3½ years of age and mumps at 5 years, without complications; and had had a tonsillectomy at 3 years. She had been immunized against diphtheria, pertussis, smallpox, and typhoid, and had had a booster dose of the latter in 1948. A tuberculin patch test done recently in school was reported negative.

The initial physical examination revealed a well developed, well nourished, but pallid white girl of 10 years, 53½ inches tall and weighing 68½ pounds. The temperature was 100.7 F. rectally, pulse 92, respiration 24, and blood pressure 100 systolic, 60 diastolic. A mass was felt 5 fingersbreadth beyond the left costal margin. Because of marked pelvic and axillary hair and coarse facial features, she was referred to a gynecologist for endocrine consultation.

Laboratory studies showed 4,260,000 red blood cells with a hemoglobin of 82 per cent, and 12,700 white blood cells, with a differential count of 54 per cent segmented polymorphonuclears, 1 per cent stab forms, 40 per cent lymphocytes, 1 eosinophil, and 1 blastocyte. The sedimentation rate was 13 mm. per hour (Cutler). A urinalysis was negative.

The patient was referred to a Baltimore hospital for a more definitive diagnostic examination. The only significant physical finding in Baltimore was a palpable mass in the left upper quadrant, which extended from 6 to 7 cm. below the costal margin and was thought to be the spleen. The suggested diagnosis was splenomegaly of undetermined etiology.

Roentgenograms of the chest disclosed an irregular patch of infiltration in the right upper lobe suggestive of a virus pneumonia, tuberculosis, or a metastatic process. (Fig. 3). Intravenous pyelograms, long bone films, and skull films were negative. Roentgenograms of the abdomen showed an enlarged spleen.

The fasting blood sugar was 76, the blood cholesterol 296, and a serologic test for syphilis negative. Sedimentation rates varied from 10 to 32 mm. an hour. Results of tuberculin skin tests were: O.T. negative; 1-10 PPD (second test dose) negative. Histoplasmin skin tests showed an increasingly strong positive titer of 1:1000 (edema 2.5 cm.) Cold agglutinin tests done on October 18, 1950, showed a positive titer of 1:80, but repeated tests on three other occasions were negative.

A biopsy of the bone marrow was initially reported as negative; in February, 1952, however, it was reviewed by Dr. Rich, who found a tubercule suggestive of histoplasmosis, brucellosis, or tuberculosis. Bacteriologic studies done on the bone marrow showed no growth at the end of one month. The hematologist reported that the bone marrow was normal. Malaria smears were repeatedly negative.

Two days after a bone marrow biopsy on November 2, 1950, the patient's temperature rose to 100 F. rectally, and there appeared on the left side of her pharynx a small flat ulcer, which healed in two days. On November 5 another ulcer appeared on the right side of the pharynx and was accompanied by fever, but cleared up by November 8. The patient was sent home with a diagnosis of histoplasmosis or virus pneumonia. She was placed on a high caloric, high vitamin diet and ordered to rest. A roentgenogram of the chest in February, 1951, showed some clearing of the pneumonia process (fig. 4).

On May 25 a tuberculin skin test was again negative, but a histoplasmin skin test was more strongly

positive (edema 4.5). The sedimentation rate was 9 mm. per hour. A roentgenogram of the chest showed infiltration in the base of the right upper lobe of the lung, and enlarged mediastinal nodes in the right hilum. No evidence of calcification was seen. On May 30 diarrhea, fever, and pain in the right lower quadrant of the abdomen developed in the patient. These were diagnosed as appendicitis by the local family physician, who performed an appendectomy. He reported a normal-looking appendix, however, and a smooth postoperative course.

Dr. Amos Christie saw the patient on August 3, 1951, after having reviewed all the previous reports and records. He reported that the complement fixation test on the blood at that time was positive, indicating persistence of activity.

The last roentgenogram of the chest taken October, 1951, revealed a new lesion in the second interspace of the left upper lobe, representing either a re-infection or a spread of the process. The complement fixation test for histoplasmosis was still strongly positive at this time.

When the patient was last seen on December 11, 1951, a progressive weight gain to 95½ pounds was noted. The temperature was 99 F. rectally, the hemoglobin was 99 per cent, the sedimentation rate was 11 mm. per hour, and the spleen was no longer palpable. A complement fixation test made on blood drawn March 13 was reported positive (1:256). The suggested diagnosis was probable benign pulmonary histoplasmosis.

Comment

Until recently histoplasmosis was thought to be invariably fatal. Now it appears that there are benign and intermediate forms of the disease as well as progressive infections. The most common form is the benign asymptomatic type, which closely resembles primary tuberculosis. The resulting pulmonary calcifications in the two diseases are indistinguishable by roentgen examination. These primary pulmonary case are so mild as to be almost asymptomatic, healing with only a residual skin sensitivity to histoplasmin and with pulmonary calcifications. Thus, it would seem that histoplasmosis may be much more common than the literature indicates, with the greatest prevalence in the area of the eastern slope of the Mississippi River Basin. This has been corroborated by Selective Service Induction roentgen studies.

With histoplasmosis, allergy analogous to that in tuberculosis develops. The complement fixation test may have a prognostic value, since apparently it is positive in active, progressive cases and negative in benign cases. The two tests, therefore, complement each other. In the acute, active case, the skin test may result in a negative reaction to histoplasmin. Thus it is of little value in diagnosing the fatal, infantile form of histoplasmosis. It might be considered comparable to the negative tuberculin test so often seen in overwhelming miliary tuberculosis where an exhaustion anergy occurs. The benign form carries an excellent prognosis, since it is asymptomatic and requires no treatment.

Summary

1. Histoplasmin sensitivity is more common in North Carolina than was formerly thought, and is associated with pulmonary calcification in non-reactors to tuberculin as described by authors. This sensitivity is more prevalent in Western and Eastern North Carolina.

2. A survey of 203 school children in Hyde county showed that 42 per cent were sensitive to histoplasmin. In Pasquotank and adjoining counties 12.5 per cent of 774 high school children reacted to histoplasmin. Antigen of a different source was used in the two surveys, which might account for the marked difference in the percentage of reactors.

3. A probable case of mild histoplasmosis in a 10 year old child from Northeastern area of North Carolina is reviewed. Malaise, anorexia, and headaches were the only symptoms which were associated with a low grade fever, splenomegaly, and a patchy pneumonic infiltration.

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Tuberculosis control demands attention to numerous and varied emotional factors. There is the fear of diagnosis which prevents some from participating in mass x-ray campaigns. There is the psychological trauma connected with a diagnosis of tuberculosis. There are the problems involved in adjustment to the illness and the treatment regime. Finally, there is the problem of readjustment to normal social and occupational activity.—Robert H. Felix, M.D., Tr. 1950 Conf. Pub. Health A., N.Y.C.

THE MANAGEMENT OF GOUT

HENRY L. VALK, M.D.

WINSTON-SALEM

Gout is a condition for which much can be done therapeutically, not only in relieving the acute attack, but in preventing recurrent attacks and their secondary effects and complications. The most important factor in the management of gout is the recognition of its presence[1]. Unfortunately, the clinical picture of gout is extremely variable, and it may mimic many other disease processes. Hence, its diagnosis depends upon a high index of suspicion in the physician.

Etiology and Complications

Gout is a disease of unknown origin which is characterized by an inborn defect in the body's ability to handle uric acid. Uric acid is an end product of purine metabolism, and may be derived from all nucleoproteins. Whether the increase of uric acid in the blood or serum of gouty patients is the result of excessive formation, insufficient excretion, or diminished destruction of urates in the body has not been conclusively demonstrated. Recent studies with radioisotopes have shown that a miscible pool of uric acid exists in the blood and tissues of both normal and gouty individuals, but that the size of this pool in the gouty patient may be 15 to 30 times as great as that found in the normal person. These same studies have suggested that when such a large amount of uric acid is present, much of it may exist as solid matter in the tissues[2].

In patients with gout the incidence of arteriosclerosis, hypertension, degenerative vascular disease, nephritis, and pyelonephritis is increased[3]. It is these associated complications which make the diagnosis and proper management of gout so extremely important.

Diagnosis

Classically, gout is characterized by recurring episodes of acute paroxysmal arthritis followed by complete remissions of varying duration. The acute attack of gout is extremely painful and totally disabling, but in the periods of remission which are characteristic of the disease, no objective or subjective findings may be present. Later, as urate deposits occur, chronic tophaceous gout may develop. This is characterized by the presence of gouty arthritis which is nonremitting and by the presence of tophus formation. Unfortunately, gout does not always present this classic textbook picture. For this reason, it should be suspected in anyone presenting a monarticular arthritis which comes on suddenly and subsides completely within a few days or weeks. Although the joints of the extremities, and particularly the great toe, are most commonly affected, any joint in the body may be involved. The affected part is exquisitely painful and tender; it is swollen and hot, and has a red or purplish color. Frequently the picture resembles an acute infection and it may be felt that surgery is indicated. In such cases a diagnosis of acute cellulitis, bursitis, osteomyelitis, tenosynovitis, or a septic joint is often made.

For an unexplained reason, attacks of gout most commonly begin during the night or early morning, and there may be no prodromal signs or symptoms. Precipitating factors are thought to be dietary or alcoholic excesses, slight physical trauma, psychic trauma, previous unrelated medications or surgery. Attacks may be self-limited and subside without any specific therapy other than analgesics. It is not uncommon for an attack to subside following the use of only a purgative.

In the early phases of acute gout tophi may be entirely lacking, even though a meticulous search is made of the more common sites—the ears, fingers, toes and elbows. If the disease has existed for some time and acute attacks have recurred often, then tophi are almost certain to be present. If a tophus is recognized or suspected, it should be opened with a sterile needle or scalpel blade and the contents examined microscopically. Identification of uric acid crystals is easy, and their presence is pathognomonic of gout.

When the disease becomes chronic and produces persistent deformity, gout may be confused with rheumatoid or hypertrophic arthritis. Roentgen examination may demonstrate destruction of joints or bone, but these changes are not diagnostic of gout and may be duplicated by other disease processes such as tuberculosis, sarcoid, and rheumatoid arthritis.

Read before the Section on Practice of Medicine and Surgery, Medical Society of the State of North Carolina, Pinehurst, May 6, 1952.

From the Department of Medicine, Bowman Gray School of Medicine, Wake Forest College, Winston-Salem, North Carolina.

The finding of abnormally high levels of uric acid in the serum helps to confirm a diagnosis of gout, but this test is by no means infallible. Even in patients known to have gout the levels may vary considerably and elevations may be transient, especially in the early stage of the disease. If the patient has taken large quantities of salicylates in an attempt to obtain some relief from pain, the uric acid level may be in the range of normal even during an acute attack. Uric acid levels may, of course, be elevated in patients with renal insufficiency who do not have gout. The presence of uric acid crystals in the urine is of no diagnostic importance, since it occurs commonly in normal individuals.

When gout is recognized, it is important not only for the future health and welfare of this individual, but should cause us to look for evidences of a gouty diathesis in other members of the family, females as well as males. Though less common in women, the trait and the disease do occur in both sexes. If latent cases of gout are found, prophylactic therapy may often prevent the appearance of clinical symptoms.

Treatment of the Acute Attack

Medications

Once gout has been diagnosed, treatment is by no means uniform in all cases. For the acute attack three medicines have been proved of value: colchicine, ACTH, and cortisone.

Colchicine has been employed for many years in the treatment of acute gout. Its mode of action is unknown, but in most instances it affords dramatic relief from the pain of gout. It must be given early in an attack—the earlier the better. The approved dosage schedule is one tablet of 0.5 mg. (1/120 grain) given at hourly intervals until the pain is relieved or until symptoms of toxicity are noted. The toxic effects (nausea, abdominal cramps, and diarrhea) are not serious if the drug is stopped as soon as they appear. If they become too annoying, paregoric or codeine may be used to relieve them. It is important to withhold colchicine for 48 hours after toxic symptoms appear. In many cases relief will be noted within a few hours, and relief is usually obtained within 24 hours. If the pain of acute gout is unbearable, as it often may be, the simultaneous administration of codeine, Demerol, or morphine is sanctioned.

More recently, ACTH has been found to be effective in most cases of acute gout which are refractory to colchicine[4]. A single intramuscular injection containing 100 mg. of a long acting preparation may be administered, or 25 mg. of the aqueous preparation may be given intramuscularly every six hours. The pain, swelling, and redness accompanying the attack may be completely resolved within 24 hours. However, ACTH does not replace colchicine in the treatment of acute gout, for some cases are refractory to one and not to the other. Further, it has been shown that if ACTH is given alone an exacerbation of the disease may take place when it is discontinued. Therefore, it is recommended that colchicine be given concurrently with ACTH, if the latter is to be used[5].

Cortisone is perhaps inferior to ACTH in the acute phase of gout, since it does not produce so rapid or dramatic a response[6]. It does, however, have the advantage that it may be given orally. The dosage recommended is 200 mg. the first day, and 100 mg. each day thereafter. As a general rule, the drug should be discontinued after 48 hours if relief has not been obtained. Upon cessation of symptoms both cortisone and ACTH are to be discontinued when symptoms subside, but colchicine should be administered for several days thereafter.

A discussion of the treatment of acute gout would be totally inadequate if *cinchophen* were not mentioned. Cinchophen is still considered by many to be a most valuable drug in the management of this condition, but because of its possible toxic effect on the liver it is not so widely used today as formerly[7]. Until the safety of cinchophen is more positively established, it is wise to reserve its use for those cases of gout which are not satisfactorily controlled by other drugs and accepted measures. If it is used, it is given in doses of 0.5 Gm. three times a day during the acute attack. While it is being administered, the fluid intake should be kept at a minimum of 2 quarts a day and liberal amounts of carbohydrates should be given in the diet.

Salicylates serve a double purpose in the treatment of gout. Not only do they exert a considerable analgesic effect, but, perhaps more important, they increase the excretion of urates. Unfortunately, large doses of salicylates, 4 to 8 Gm. a day, are required and alkalinizing agents such as sodium bicarbon-

ate must be given simultaneously to prevent gastric irritation and to inhibit the precipitation of uric acid crystals in the urine. It is generally agreed that salicylates should be started during the attack and continued for an indefinite period.

General measures

The patient with acute gout can be made more comfortable in bed. Immobilization of the affected part is not imperative, but protection from accidental jolting, jarring or irritation is extremely important. The application of a glycerin pack, made by pouring glycerin between two layers of cotton, often will be very soothing for the affected joint. Warm, moist compresses may also be helpful, and at times the substitution of a cold compress affords the patient even more relief. Once the acute swelling, tenderness and redness subsides, the patient may be allowed to use the affected part in moderation, though return to full activity should be discouraged for two to three days after such a remission.

Interval Treatment

The management of the asymptomatic or interval phase of gout during which the patient has no objective or subjective evidences of the disease except an elevated level of uric acid in the serum, is as important as the treatment of the acute episode. Probably the most important factor in the prevention of further attacks is the diet. Since gout seems to occur more often in people who are overweight, the caloric as well as the purine content should be considered in planning the diet. An acceptable diet in the treatment of asymptomatic gout is one low in purines and low in fats. Normal diets contain around 1,000 mg. of purine per day, but a low purine diet should have no more than 100 to 200 mg. Milk, eggs, bread, cheese, fruits, and cereals are all low in purine content. Sweetbreads, anchovies, brains, liver, kidneys, sardines and gravy contain large quantities of purine. Restriction of the alcohol intake is likewise advised in the management of interval gout, but there are patients who find that they can take alcohol in moderation without ill effect. If there is a history of allergy to specific foods, the patient should exclude such food products from his diet.

In some cases, acute attacks of gout can be prevented by diet alone, but for the majority of patients concomitant salicylate therapy is necessary. Aspirin or sodium salicylate should be given in doses of 5 Gm. a day for four days a week together with sodium bicarbonate, 6 to 8 Gm. a day.

More recently a benzoic acid derivative, Benemid, has been shown to be very effective in reducing the level of uric acid in the serum by increasing its excretion in the urine[8]. The urinary excretion of uric acid reaches a maximum effect within 48 to 72 hours after a dose of the drug, but continues high for longer periods. Benemid exerts this action in normal and gouty individuals alike, and so far appears to be relatively non-toxic when given in doses of 1 to 2 Gm. per day. The simultaneous administration of sodium bicarbonate is not necessary. It is available in ½ Gm. tablets and when patients are unable to tolerate the larger doses of salicylates required, Benemid may be substituted for an indefinite period. If further experience proves this drug to be as non-toxic as it now appears, it may be an invaluable aid in the therapy of asymptomatic gout.

There is growing belief that, in addition to the above measures, the daily administration of 0.5 mg. (1/120 grain) of colchicine may exert some prophylactic effect in the interval phase of gout.

Treatment of Gouty Diathesis

Since gout is a familial disease, it is well to perform uric acid determinations on the sera of the close relatives of the gouty patient. Most authorities now believe that if elevated uric acid levels are found, then administration of a drug such as sodium salicylate or Benemid should be carried out over an indefinite period. Time alone will reveal the value of this measure, but at least we should make every effort to detect any tendency to gout in other members of the family, just as we look for glycosuria in the families of diabetic patients.

Treatment of Gouty Arthritis

When chronic gout has led to deformity, the tophi may become large and may ulcerate spontaneously. If incised, they may fail to heal and they will then discharge urates chronically. There is nothing to be gained by incision of a tophus, except for diagnostic purposes, but at times complete removal is indicated. Currently it is suggested that, if surgery is contemplated, ACTH should be administered for two weeks preoperatively. This may cause softening of the tophus making excision easier and subsequent healing more prompt[9].

Summary

Gout is a fairly common disease which frequently resembles other unrelated disorders. Because of the variable clinical picture, the diagnosis of this disease is often difficult. Its recognition is of extreme importance, however, not only for relief of the acute attack, but for the prevention of subsequent attacks and complications. Gout should be suspected whenever one is confronted with a monarticular arthritis which comes on abruptly, subsides completely, and tends to recur.

Management of the acute attack requires the prompt administration of colchicine. If this drug does not afford relief, ACTH or cortisone may be necessary. In the asymptomatic phase the administration of salicylates or possibly Benemid, and adherence to a low purine, low fat diet offer the best chance of preventing subsequent attacks and complications. It is felt that constant diligent care of the patient with gout or the gouty diathesis can minimize or even prevent the serious secondary effects and complications of this disease.

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Spiritual attributes of the heart. We physicians have the opportunity of inspiring our patients with courage, determination, optimism, equanimity and patience, all attributes of the spirit. The word "courage" comes from the word "heart" — **coeur** in French, **cor** in Latin; and it is courage above all things which is needed by many individuals who have cardiovascular disease. Such virtues as courage, optimism and patience may neutralize, somewhat at least, the effects of the alarm reaction, acute or chronic.—White, P. D.: The Psyche and the Soma, Ann. Int. Med. 35:1303 (Dec.) 1951.

CLINICAL EVALUATION OF CORTISONE IN OPHTHALMOLOGY*

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Cortisone is one of some 30 compounds to be secreted by the adrenal cortex. It was identified in 1936 by Mason, Myers and Kendall[1], and synthesized by Sarrett in 1946[2]. Some of the physiologic effects of cortisone on tissue are known, but many are poorly understood. The desirability of its action in many ocular diseases is not firmly established, and its use in these disorders must rest, at least in part, on an empirical basis.

Cortisone falls into group 1 of the adrenal cortex steroids, the principal effect of this group being on protein and carbohydrate metabolism, tending to produce a negative nitrogen balance and a relatively insulin-resistant hyperglycemia. There may also be increased potassium excretion, with sodium and chloride retention, leading to retention of fluid. In addition to these general metabolic effects, there are some very definite effects on local tissue reaction[3]. In inflammatory reactions, including those of bacterial, chemical, thermal, and allergic origin: (1) cellular exudate is reduced; (2) capillary permeability is reduced; and (3) there is less formation of granulation tissue and resultant scarring.

It is the purpose of this paper to report the results of local and systemic cortisone therapy in 143 cases selected from the histories of 600 patients as having sufficient follow-up observation to warrant inclusion. All patients included in this series were treated while hospitalized or in the out-patient department of the McPherson Hospital.

Method of Treatment

All patients receiving systemic cortisone were hospitalized, and a rather rigid routine was adhered to in all cases. First, a complete history was obtained and a physical examina-

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* 11-dehydro-17 hydroxycorticosterone-21-acetate. Manufactured by Merck and Co., Inc., Rahway, N. J.

tion which included roentgen examination of the chest, examination of the eyes, nose and throat, and dental survey was done. Laboratory work consisted of a urinalysis, a complete blood count, fasting blood sugar determination, and circulating eosinophil count. The patients then received 200 mg. of cortisone intramuscularly the first 24 hours, and 100 mg. daily thereafter as long as treatment was continued. Blood pressure was determined twice daily; urine examination and circulating eosinophil counts were performed daily. If the circulating eosinophil count fell below 100 per cubic millimeter, the dosage of cortisone was accordingly reduced. If the blood pressure became increased or evidence of fluid retention appeared, treatment was decreased or discontinued. In one instance it was necessary to discontinue cortisone because of marked restlessness and insomnia.

Those patients receiving local therapy received cortisone either in the form of local instillations of a 2.5 per cent solution in saline, one drop in the affected eye every two hours while awake; or in the form of a weekly subconjunctival injection of 0.5 cc. of a 2.5 per cent solution. Usually when improvement had been noted, the strength of cortisone was reduced to 1.25 per cent. After two weeks the frequency of instillation was reduced to three times daily. Treatment was then discontinued, or a maintenance dose of 0.5 per cent cortisone three times a day was instituted.

Results

The results of treatment are shown in tables 1, 2, and 3.

Uveitis

Granulomatous uveitis: Fifteen patients received cortisone therapy. Five were treated by the systemic route alone; 7 by topical instillations alone; 2 by both topical and systemic administration; and 1 by systemic, topical, and subconjunctival administration. Ten patients were improved, 5 were unimproved, and 3 had relapses. It is of interest that in 2 of the patients having relapses, the uveitis was thought to be tubercular—and the relapse was complete, proving extremely refractory to further treatment. The end result was not good.

In 1 patient who manifested good laboratory and clinical evidence of Boeck's sarcoid, granulomatous uveitis with secondary glaucoma developed. This patient received typhoid vaccine intravenously, topical cortisone, and atropine. The secondary glaucoma was controlled in one week; the uveitis was arrested in three weeks. This response was amazing. Vision improved from hand motions to 20/30. It is difficult to assay the effect of cortisone in this case, since the patient had also received intravenous injections of typhoid vaccine.

Table 1
Results of Cortisone Therapy in 63 Cases of Uveitis

Type	No. Cases	Route of Administration			Results		
		Topical	*Subconjunctival*	*Systemic*	*Improved*	*Not Improved*	*No. Relapses*
Granulomatous	15	8	2	7	10	5	3
Nongranulomatous	9	7		4	6	3	1
Choroidits	8	1	2	8	7	1	2
Postoperative uveititis	10	10		1	9	1	0
Iritis	18	14		6	18		5
Sympathetic ophthalmia	2	2		2	1	1	0
Harada's disease	1	1		1	1		0

Nongranulomatous uveitis: Nine patients were treated with cortisone. In one case the agent was given by the systemic and subconjunctival routes; in 3 cases by the systemic and topical routes; and in 5 cases by the topical route alone. Six cases were considered improved, 3 cases were unimproved, and a relapse occurred in 1 case. Of the 3 patients who were unimproved on cortisone, 1 improved after intravenous injections of typhoid vaccine, and 1 after treatment of a chronic colitis which was thought to be the cause of his uveitis. One patient showing a relapsing course received a second course of systemic cortisone, the daily dosage being slowly reduced to 25 mg. daily; he was then maintained on topical cortisone and no further relapse occurred. Two patients had secondary glaucoma which was controlled by cortisone.

Postoperative uveitis: The 10 cases of uveitis presented here all followed cataract extraction. Nine of the patients received topical instillations of cortisone; 1 patient both topical and systemic cortisone. Nine patients were improved, and 1 was unimproved. These cases were selected primarily because the postoperative uveitis was classed as being rather severe.

Choroiditis: Eight patients received cortisone. All 8 received systemic cortisone therapy; 2 received subconjuctival injections

in addition; and 1 received systemic, subconjunctival, and topical cortisone therapy. Of the 8 patients, 7 were improved; 2 had relapses and required rather prolonged treatment. The unimproved patient showed early clearing of the vitreous; however, the lesion remained active. This patient, after seven days of treatment, showed an elevation of 40 mm. in blood pressure, and cortisone was discontinued. Perhaps the most striking feature noted in these cases was the rather immediate clearing of vitreous opacities.

Iritis: Eighteen patients received cortisone therapy. Of these, 3 received both systemic and topical treatment, 3 systemic treatment alone, and 12 topical treatment alone. All were considered improved; however, 5 patients had relapses which improved after cortisone therapy was resumed. Included is 1 case of granulomatous iritis in which the iris was apparently the only portion of the uveal tract involved. The remainder of the cases were either acute fibrinous iritis, or nongranulomatous iritis with some fibrinous reaction. In most cases, improvement occurred with remarkable speed.

Sympathetic ophthalmia: Two patients received cortisone therapy. In each instance, both the topical and systemic routes were used. One case followed cataract extraction and cortisone was started four months after onset of sympathetic ophthalmia in the other eye. Some immediate improvement was noted; however, a prolonged relapsing course followed, and no real improvement was thought to be due to cortisone. Eighteen months after initial therapy, while the patient was on a maintenance dose of 0.5 per cent topical cortisone given twice daily, she developed a corneal ulcer. Only *Staphylococcus albus* could be cultured from the ulcer, which has subsequently proven extremely refractory to all therapy, including extensive use of antibiotics. At present the ulcer is quiescent, but not entirely healed.

The second case followed a perforating wound involving the ciliary body. The wound was repaired and seemed to heal in a satisfactory fashion, the only postoperative finding being a low grade uveitis. The patient received chloramphenicol for almost two weeks after the injury; and when danger of infection was considered to be over, systemic cortisone therapy was started for the uveitis. Five days after the institution of therapy, the patient developed sympathetic ophthalmia; the wounded eye was enucleated four days after the clinical onset of the disease. In this case, cortisone therapy was continued for approximately three months, and the outcome four months later has been very satisfactory. This case would seem to demonstrate clearly that cortisone will not prevent sympathetic ophthalmia.

Harada's disease: One patient with the syndrome of Harada's disease was treated with local and systemic cortisone. This patient had bilateral uveitis, bilateral retinal detachments, lymphocytosis of the spinal fluid, dysacousia, and alopecia. The patient received systemic therapy for one month and topical therapy for nine months. When the patient was last seen, the best corrected vision was 20/30, the retinal detachments had completely subsided, and the uveitis was quiescent.

Keratitis

Interstitial keratitis: Seventeen patients received topical cortisone and local atropine.* These patients were referred from the Eastern Medical Center, the rapid treatment center for syphilis in North Carolina. Some of the patients had not received adequate antiluetic therapy; these received 6,000,000 to 8,000,000 units of penicillin. Ophthalmologic examination was done at McPherson Hospital at 10 day intervals. All 17 patients were considered improved. Seven of the patients had recurrences, 2 having a third recurrence. One patient required six months of treatment before the keratitis could be considered inactive, while in 2 cases the keratitis was entirely arrested in 10 days. In every case the relief of photophobia and lacrimation was dramatic.

Dendritic keratitis: Five patients received topical instillations of cortisone, 4 were considered improved, and one unimproved; 2 patients had a rather severe relapse after showing initial improvement, necessitating cauterization of the cornea. In the 5 cases reported here, cortisone would seem to have been of doubtful benefit since 1 case was unimproved and 2 cases showing initial improvement had relapses necessitating other treatment.

Herpes zoster: Five patients received cortisone; 4 of these were considerably improved, 1 was unimproved. One improved patient had a recurrence, during the course of

*Some of these cases have been previously reported by Crane, G. W., and McPherson, S. D., Jr., in the American Journal of Syphilis, Gonorrhea, and Veneral Disease, 35: November, 1951.

Table 2
Results of Cortisone Therapy in 58 Cases of Keratitis

Type	No. Cases	Route of Administration			Results			
		Topical	*Subconjunctival*	*Systemic*	*Improved*	*Not Improved*	*No. Relapses*	*REMARKS*
Interstitial	17	17			17	0	7	
Dendritic	5	5			4	1	2	with severe relapse
Herpes zoster	5	5			4	1	1	
Superficial punctate	7	7			5	2	2	
Recurrent erosion	8	8			6 (current attack)		2	
Fuchs' dystrophy	9	9			No case showed permanent improvement			
Keratitis from actinic burn	1	1			Immediate improvement		0	
Keratitis with vascularization	6	6			6	0		Maintenance dose for long period

Table 3
Results of Therapy in 22 Cases of Miscellaneous Ocular Disorders

Diagnosis	No. Cases	Route of Administration				Results		
		Topical	*Subconjunctival*	*Systemic*		*Improved*	*Not Improved*	*No. Relapses*
Episcleritis	6	6				6		1
Nodular scleritis	2	2		1		1	1	0
Vernal conjunctivitis	6					4	2	4 (complete)
Coats' disease	1	1		1			1	
Malignant exopthalmos	1				ACTH		worse	
Corneal transplant	4	4	0	0		4		0
Ocular pemphigus	2	2		2	ACTH	0	2	

which secondary glaucoma occurred and the inflammatory signs seemed to become refractory to cortisone.

Fuchs' corneal dystrophy: Nine patients with Fuchs' dystrophy recieved topical cortisone therapy. These patients all showed rather marked immediate improvement in the epithelium and striking reduction in stromal edema when this was present. Unfortunately, this improvement was invariably transitory in nature. At no time was any improvement in the appearance of the endothelium noted, and any improvement in visual acuity was transitory and of small degree. No permanent improvement was seen in any case.

Superficial punctate keratitis: Seven patients with superficial punctate keratitis received topical applications of cortisone; 4 patients showed improvement, while 2 cases were considered entirely unimproved. One patient, later treated with vitamin A, cleared satisfactorily, although he showed none of the generally recognized characteristics of vitamin A deficiency. Another case with a history of previous allergy with desensitization cleared quickly when cortisone was given locally but showed a tendency to relapse. This patient was given a maintenance dose of 0.5 per cent cortisone three times daily for two months, and has had no relapse to date.

Keratitis with vascularization: Six patients with superficial keratitis with vascularization received topical cortisone therapy. All showed improvement without relapse. However, these patients generally received a maintenance dose of 0.5 per cent cortisone applied topically three times daily for as long as three months after initial clearing. These were all longstanding cases and it was difficult to establish the etiology. All had been observed for a number of years to show alternating periods of quiescence and activity. All the patients improved subjectively, and 4 of the 6 showed some improvement in vision.

Recurrent corneal erosion: Eight patients received topical applications of cortisone. Three had previously been treated with a variety of drugs without relief. All patients experienced almost immediate relief, and the current attack was terminated in one week. Recurrences in two cases developed which responded promptly when cortisone therapy was resumed.

Keratitis from flash burn: This patient had a rather severe keratitis from using an electric welding torch. One eye had been previously enucleated. He was given a 1.25 solution of cortisone to use locally every two hours. When seen two days later, he stated

that he was perfectly comfortable within two to three hours after beginning treatment. It was four days after the burn before the cornea was normal to slit lamp inspection. Since the keratitis in this case is entirely a reaction to an irritating stimulus, cortisone should be ideal, as it blocks the undesirable reaction.

Miscellaneous disorders

Episcleritis: Six cases of episcleritis were treated topically with cortisone. All cases were considered improved. Although a relapse occurred twice in 1 case, remission was very prompt after the resumption of therapy.

Nodular scleritis: Two patients with nodular scleritis received cortisone. One was treated first with topical cortisone, with absolutely no improvement. Systemic cortisone was then administered, with dramatic improvement. The second case occurred in a patient with far advanced uveitis who previously had had severe secondary glaucoma. Treatment resulted in moderate subjective relief, but no visible objective change.

Vernal conjunctivitis: Six patients exhibiting clinical appearance of vernal catarrh received topical applications of cortisone; 2 of these showed no improvement, and 4, while temporarily improved, had complete relapses when cortisone was discontinued. In 2 cases the temporary improvement could not be maintained when cortisone therapy was resumed, the condition seeming to become refractory in two to four weeks. Results in these 6 cases were quite unsatisfactory.

Malignant exophthalmus: The use of ACTH in one patient with this disorder seemed to accelerate the progress of the exophthalmus. Four days after the institution of ACTH therapy, the eyes practically prolapsed from the orbit. The patient required bilateral Shugrue orbital decompressions with marginal tarsorrhaphies.

Ocular pemphigus: Two cases of ocular pemphigus were treated. Both patients received ACTH and later topical cortisone. No beneficial results were seen in either case, further progress being noted regardless of treatment used.

Corneal transplants: Topical cortisone was administered to 4 patients after a penetrating corneal graft had been performed, beginning on the seventh postoperative day in two eyes, on the eighth postoperative day in one, and on the sixteenth postoperative day in the remaining eye. No adverse effects on wound healing were noted. The cornea cleared quickly, and in no instance did the graft become vascularized.

Comment

Certain facts concerning the influence of cortisone on the clinical course of various ocular disorders have been noted by a number of observers in the past few years. These are of value in determining the advisability of cortisone therapy in most cases. Perhaps the most dogmatic statement which can be made is that the use of cortisone is unwise in any instance where a straightforward bacterial invasion is a prominent feature[3]. Cortisone inhibits the normal defense mechanism, leaving bacteria free to spread almost at will.

Thus in the present series, the results in the treatment of uveitis have been irregular. This irregularity probably reflects our inability to state that bacteria are or are not present in any given case of uveitis. In accord with this, the two severe instances of relapse occurring in granulomatous uveitis were in cases thought to be tuberculous[5]. Similarly, the excellent results obtained in the treatment of postoperative uveitis represent the response that may be expected in treating uveitis due to trauma rather than to direct infection. The good result obtained in treating the one case of Harada's disease is probably explained on the same basis. In this instance, bacterial, fungal, and viral inoculations were made of aqueous humor, subretinal fluid, spinal fluid, and blood. All reactions were negative, indicating that, at least at the time of institution of therapy, no infectious agent could be demonstrated.

The excellent results obtained in treating acute fibrinous iritis may be explained by two facts. First, the location of the lesion lends itself readily to intensive topical therapy, permitting a high concentration of the drug in the involved tissue. Second, the reaction of the eye is seemingly out of proportion to any known causative factor, and cortisone is therefore able to effect marked improvement by blocking vascular and cellular responses.

The results obtained in the treatment of various types of keratitis in the present series fall into the pattern to be expected in view of the mechanisms concerned in the disorders. Thus the excellent results obtained in interstitial keratitis might be anticipated

in corneal disease, in which the chief manifestations are inflammatory and in which the presence of etiologic organisms has not been adequately demonstrated. The same might be said of recurrent corneal erosion, which is predominately a post-traumatic disorder. Conversely, the poor results obtained in Fuchs' corneal dystrophy are to be expected in a disorder which is predominately degenerative.

The irregular results obtained in the viral keratitides, simplex and zoster, may be due to the presence or absence of the virus in the tissues at the time that treatment was instituted.

Episcleritis has long been considered an allergic manifestation of rheumatoid arthritis, gout, or focal infection[6]. The prompt and sometimes dramatic improvement observed in these 6 cases lends support to this concept of the etiology of the disease.

The poor results obtained in the treatment of vernal conjunctivitis are difficult to explain. Possibly the 6 cases reported herein had undergone such advanced anatomic changes that cortisone afforded only temporary subjective relief without affecting the pathologic process. From previous observation, it would seem that antihistaminics are more effective in the control of symptoms in this disorder[7].

The effect of cortisone in maintaining the clarity of corneal grafts offers to corneal surgery a useful adjunct which has not been previously available. With cortisone, one is able to block corneal vascularization and to decrease corneal edema. In the 4 reported cases there was no instance in which the use of cortisone seemed to interfere with wound healing[8].

When first using cortisone, it was our practice to discontinue the drug when satisfactory clinical improvement had been noted. Relapses occurred in a high percentage of cases. In recent months we have followed the general routine of reducing dosage in systemic therapy or the strength of solution in topical therapy after satisfactory improvement has occurred. If improvement is maintained, patients are gradually "weaned" from cortisone. It is our impression that the percentages of relapses has been substantially reduced by this scheme of therapy.

Summary

1. The results of treatment of certain ocular diseases with topical and systemic cortisone in 143 patients is reported.

2. Cortisone was found to be most effective in the treatment of inflammatory disorders of a hypersensitive nature in which no etiologic organism could be demonstrated.

3. The high incidence of relapse occurring after the cessation of cortisone therapy indicates that cortisone controls the inflammatory manifestations of these disorders with no specific curative effect.

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THE LOCAL USE OF CHLOROMYCETIN IN INFECTED EARS*

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Since Chloromycetin[1] was introduced in 1948, it has proved to be a valuable drug in the treatment of bacterial infections. It is of particular value in treating diseases caused by various gram-negative organisms[2], less so in those caused by gram-positive and acid-fast organisms.

Since gram-negative organisms are responsible for many ear infections, it was felt that the local use of Chloromycetin was warranted in treating these infections, and this report concerns the results of such local therapy.

Materials and Method

The cases reported were not selected. They

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* Chloromycetin in this study was made available through the courtesy of Parke, Davis and Company, Detroit, Michigan.

Table 1
Age and Sex Distribution

Age in Years	Male	Female
Up to 10	4	4
11-20	9	6
21-30	9	8
31-40	2	5
41-50	4	6
51-60		2
Total	28	31

represent consecutive cases of draining ears seen in the Otorhinolaryngology Out-Patient-Clinic of the North Carolina Baptist Hospital and in the private practice of one of the authors.

A culture of the drainage was made before any further manipulation was carried out. In approximately 25 per cent of the cases no report of the culture is available. After the culture was made, the ear was thoroughly cleaned with a cotton-tipped applicator and the diagnosis of external otitis or otitis media was established, with further notation as to the location of the perforation in the tympanic membrane when present. The patient was then given Chloromycetin and directed to place 5 drops of the solution in the affected ear four times daily without cleansing the external canal. Follow-up care was given and observation made at regular intervals.

The Chloromycetin solution supplied the patient was prepared by adding the contents of a 2 cc. ampoule containing 0.5 gm. of Chloromycetin in a highly hygroscopic liquid base (acetyl dimethylamine) to 28 cc. of 70 per cent alcohol. Thus the individual dose was 5.5 mg. of the drug.

Fifty-nine patients, with 63 diseased ears, were given 64 courses of treatment. Ten of these did not return for follow-up; therefore, the records of 54 courses of therapy are being analyzed. Twenty-eight of the patients were male and 31 were female. Ages ranged from 4 months to 56 years (table 1).

The duration of therapy varied from four days to six months, 33 of the 49 patients requiring treatment for 30 days or less. Only 3 were treated as long as three to six months (table 2).

Bacteriology

Fifteen organisms were cultured from 40 ears of 36 patients. The most common organism was staphylococcus, which was cultured from 18 ears. Diphtheroids were the next most common, being found in 11 ears.

Table 2
Duration of Therapy

Duration	No. Cases
4-14 days	18
15-30 days	15
1 - 3 months	13
3 - 6 months	3
Total	49
Shortest	4 days
Longest	6 months

Table 3
Organisms Cultured and Response to Therapy
36 Patients 40 Ears

	Gm.	*No. Ears*	*Dry*	*Improved*	*No Change*
Staphylococcus aureus	+	18	16	2	
Diphtheroids	+	11	10	1	
Pseudomonas aeruginosa	−	8	8		
Proteus mirabilis	−	8	4	4	
Aerobacter aerogenes	−	6	5		1
Alcaligenes faecalis	−	5	4		1
Beta streptococci	+	4	3		1
Coliform	−	2	1	1	
Neisseria catarrhalis	−	2	2		
N. Sicca	−	1	1		
Pneumococcus	+	1	1		
Pr. rettgeri	−	1	1		
Pr. morganii	−	1			1
Alpha hemolytic streptococci	+	1	1		
Paracolon bacillus	−	1	1		

Pseudomonas and *Proteus mirabilis*, found in 8 ears, and *Aerobacter aerogenes*, in 6 ears were next. The remaining 10 organisms were found in from 1 to 5 ears each. Approximately half of the ears yielded mixed cultures. Eighty-two and two-tenths per cent of these organisms responded to therapy, 11.5 per cent showed improvement, while 5.7 per cent showed no change (table 3).

Results

Eleven cases of otitis externa (6 acute, 5 chronic) were treated, and all ears became dry.

One case of acute otitis media was treated without improvement. This patient subsequently underwent simple mastoidectomy.

There were 23 cases of chronic otitis media, 20 with central perforation, and 3 with marginal perforation. Nineteen of the ears with central perforations became dry, while one showed marked improvement. Only 1 ear with a marginal perforation became dry, while 2 showed no change. One of these patients subsequently underwent a radical mastoidectomy, and after a second course of treatment the ear became dry.

Table 4
Diagnosis and Results in 49 Patients with 53 Infected Ears (54 Courses of Therapy)

	No. Cases	Dry	Per Cent	Improved	Per Cent	No Change	Per Cent
External Otitis							
Acute	6	6					
Chronic	5	5					
Acute Otitis media	1					1	
Chronic otitis media							
Central perforation	20	19		1			
Marginal perforation	3	1				2	
Radical mastoidectomy cavities							
Cholesteatoma	15	9		6			
Fenestration	4	2		2			
Totals	54	42	78	9	17	3	5

Fifteen patients with radical mastoidectomy cavities were treated. Nine of these cavities (including that of the patient noted above) became dry, while 6 showed marked improvement. Four patients had draining ears following fenestration. Two of these were cured, while the other 2 showed improvement.

Of the 54 courses of therapy, 42 (78. per cent) resulted in dry ears, nine (17 per cent) in marked improvement, while only three (5 per cent) resulted in no improvement (table 4).

Three patients had an allergic reaction characterized by swelling, tenderness, and redness of the ears. In each case the reaction subsided within 48 hours after the therapy was discontinued. Two patients had no further drainage, and one was greatly improved. The onset of the reaction was two weeks, six weeks, and three months, respectively, after the beginning of therapy.

These results compare favorably with those of other investigators using other drugs locally in treating infected ears (table 5).

Summary

Results of 54 courses of treatment with Chloromycetin used locally in infected ears are presented. Seventy-eight per cent of these courses resulted in dry ears. Three patients showed a sensitivity reaction.

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Table 5
Comparison of Results Obtained in Local Therapy of Infected Ears

Therapy	Cases	Dry	Improved	No Change	Sensitive	No Follow-up
Glycerite of H_2O_2[3] (Otitis media)	130	94 (72%)	12 (9%)	10 (8%)	0	14 (11%)
Sulfamylon[4] (Otitis externa and Otitis media)	164	119 (72%)	?	?	?	?
Sulfamylon[5] (Otitis externa and Otitis media)	141	141 (100%)			0	
Furacin[6] (Otitis externa and Otitis media)	142	87 (61%)	44 (31%)	7 (5%)	3	
Furacin and Cresatin[7] (Otitis externa)	120	105 (84.1%)	19 (16.1%)		0	
Streptomycin[8] (Otitis externa and Otitis media)	27	15 (55.5%)	7 (25.5%)	5 (18%)	0	
Sulfamylon with Streptomycin[9] (Otitis externa and Otitis media)	29	11 (38%)	11 (38%)	6 (20%)	3	1 (3%)
Polymyxin-Bacitracin[10] (Otitis externa)	89	"Uniformly favorable results"				
Aureomycin[11] (Otitis externa)	46	"Drug of choice in these infections"				
Chloromycetin (Otitis externa and Otitis media)	64	42 (66%)	9 (14%)	3 (5%)	3	10 (15%)

Discussion

Dr. Ralph Arnold (Durham): Dr. Ausband has certainly presented a group of illuminating figures. These results exceed my fondest expectations for the patients I have treated locally with Chloromycetin or any other drug. I would like to hear the experience of others who have used it.

Dr. George B. Ferguson (Durham): While I do not have any figures at hand, I am afraid that these results also exceed our best expectations. We have obtained some excellent results with Gantrisin solution, and I am sure that some of the new antibiotics are going to have startling results. By carefully arriving at the drug of choice and making cultures prior to any form of treatment, we are certainly going to increase the percentage of favorable results. On this basis, the results reported here may not be greater than should be expected.

Dr. B. W. Armstrong (Charlotte): I do not want to disparage the good results reported by Dr. Ausband. The authors reviewed several articles in which the rate of cures was found to be from 38 to 80 per cent. That indicates that many patients with infected ears will get well regardless of what treatment they receive. How is it that good results are obtained with such a variety of agents? Some of us use the old-fashioned boric acid and alcohol, and others 10 per cent silver nitrate. The important thing is not what you use, but how well you clean the ear and teach the patient to keep it clean.

Dr. Harrill: I would like to emphasize that we selected these cases primarily to evaluate this drug. The results obtained are no better than those achieved with other remedies. As you recall, better results were obtained in ears with central perforations. That is the type of case in which we would expect the best response.

We had no success with patients who had marginal perforations. I doubt seriously that any drug I have used in the conservative management of a chronic ear infection with a marginal perforation is any better than the treatment I used during my residency some years ago—namely, keeping the ear clean, using alcohol, removing granulation and polyp tissue, and applying silver nitrate or chromic acid, or some other agent. That type of infection does not respond well to conservative therapy.

We do not claim that Chloromycetin is better than any other drug. We merely present these cases as a study. One may draw his own conclusions.

Dr. Arnold: I was interested in having this discussion brought up so that no one would go away with the misconception that we have a new panacea for running ears. In my opinion, we are still far removed from that panacea.

Demand for spectacles: The attitude of the public to the question of wearing glasses has altered remarkably during the last thirty years. When I began to practice it was a matter of difficulty to persuade a comely young lady to disfigure herself, even when the need for wearing glasses was apparent. Today many of the fair sex are frankly disappointed when informed that glasses are unnecessary. In my opinion spectacles should be prescribed for two reasons only: to correct defective vision and to relieve symptoms which can reasonably be attributed to errors of refraction. If this is accepted as a basic principle I am convinced that a large percentage of the spectacles worn today are unnecessary—Sichel, A.W.S.: Some Impressions of an Ophthalmologist, Brit. M.J. 2:1409 (June 23) 1951.

TREATMENT OF SEPTAL ABSCESS

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Since the advent of the antibiotics, very few cases of septal abscess have been encountered. The scarcity of recent literature on the subject is probably due to the fact that only a few cases are seen by any one physician. In cases where the septal cartilage was destroyed, most otolaryngologists have been content to drain the abscess, and if a saddle deformity developed it was left alone or turned over to the plastic surgeon for correction.

Since otolaryngologists do intranasal surgery and have a knowledge of nasal anatomy, they should be able to correct external nasal deformities. Prevention of saddle deformity following septal abscess would be a progressive step in otolaryngology. The term saddle deformity is used here to describe the depression that often develops in the area of the septal cartilage following septal abscess.

Etiology

The most comprehensive list of eitiologic factors in septal abscess was compiled by Beck[1], as follows:

1. Nasal trauma
2. Endonasal operation
3. Inflammatory condition of the nose and its soft parts (furuncles, erysipelas, suppuration of accessory cavities)
4. Abscess of dental origin
5. General infections such as typhus, scarlet fever, sepsis, variola, and measles
6. The so-called idiopathic abscess, a classification not accepted by most authors.

Incidence

Statistics on the frequency of septal abscess show a wide variation. Beck states that in a large clinic one will not see more than 3 or 4 cases a year. In 1924, Yerger[2] reported an incidence of one septal abscess to every 526 cases of septal disease. In 1929, Rosenberger[3] reported one septal abscess in every 3,000 cases of nasal disease. In a review of 11,239 hospital admissions to an ear, nose and throat service, I found 4 cases of septal abscess, or an incidence of 1 case in 2,809. The incidence will probably be decreased in the future by the use of antibiotics.

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Treatment

It is generally agreed that incision and drainage, in conjunction with antibiotics, is the treatment of choice in septal abscess. Lederer[4] recommends incision, irrigation of the cavity with hydrogen peroxide, followed by some alkaline antiseptic. Vorhees[5] recommends incision, irrigation, and treatment of the cavity with pure phenol, followed by 95 per cent alcohol. Ballinger[6] advocates free incision, sulfonamides, and penicillin. Kernan[7] recommends incision, followed by removal of a piece of mucosa to obviate the necessity of a drain, although a small piece of rubber may be inserted for 24 hours. The cavity should be cleansed by suction or irrigation daily.

Abscess of the nasal septum with total destruction of the cartilage often results in a saddle deformity. Two schools of thought have developed as to why depression of the nose follows removal of the septal cartilage. The first school, which comprises most surgeons, attributes the deformity to the loss of support furnished by the nasal septum. This concept has been challenged by a second school, with Fomon as its chief advocate. Fomon[8] states that "under static conditions the septum is merely a redundant member offering no support whatever: that it functions only as a reserve safety factor when external crushing forces or internal tension stresses disturb or distort its equilibrium." He further states that depression of the nose following a submucus septal resection too near the dorsum is not due to lack of septal support but to the development of internal stresses arising from cicatrization of the deskeletonized connective tissue. He offers in support of this theory the fact that if a depression of the nose develops after an extensive septal resection in this location, it usually occurs not immediately after the operation but some weeks later. If the septum was the supporting element, deformity should occur immediately.

Extensive submucus resection can be performed and a saddle deformity prevented by inserting autogenous or isographs of nasal septal cartilage. Absence of a deformity in these cases may be due to the support given by the graft of septal cartilage, or, as Fomon believes, to the prevention of internal stresses arising from cicatrization. If Fomon is correct, a successful cartilage graft following septal abscess should prevent saddle deformity. The following is a report on the treatment of three cases of septal abscess:

Case Reports

Case 1

A 17 year old boy received a blow on the nose eight days before he was seen in the office. Three days after the injury there occurred a progressive obstruction of the left side of the septum. Physical examination was essentially negative except for a small abscess of the left side of the septum. The abscess was incised and about 2 cc. of pus removed. A small piece of mucous membrane was punched out and a drain inserted. There was very little destruction of septal cartilage. The patient was given tripazine and penicillin, and the abscess cavity aspirated daily. Under this treatment he recovered in seven days without a deformity.

Case 2

A 16 year old boy reported an abscess of the gum margin over the left upper incisor tooth and progressive obstruction of the nose for eight days before first being seen in the office. A week previously he had had influenza, with temperature rising to 104 F. The abscess of the gum was incised by a dentist, but the nasal obstruction increased. For five days before coming to the office he had complete obstruction of the nose. Penicillin therapy had been started, but because of nausea was discontinued after 6 tablets had been given.

Physical examination revealed marked tenderness and swelling of the dorsum of the nose, extending to the malar region on each side. Each nares was completely obstructed by a fluctuant swelling of the nasal septum. A draining abscess was present on the gum margin of the left upper central incisor tooth.

An incision was made in the swollen septum and about 15 cc. of foul-smelling pus and several pieces of necrotic cartilage were aspirated. The septal cartilage appeared to be completely destroyed. A small piece of septal mucous membrane was punched out and a rubber drain inserted. A culture of the pus from the abscess failed to show any growth, but a smear showed many organisms, with diphtheroids and streptococci predominating. Treatment with aureomycin and Gantrisin was started, and the abscess cavity suctioned daily. Three days later the dental abscess was again incised. The septal abscess healed in about eight days, and there was adequate breathing space. Three months later there was a marked saddle deformity of the nose.

Case 3[9]

A 64 year old woman was admitted to the hospital, stating that she had had a head cold for the previous two weeks. During this period she had noticed increasing pain and swelling on the dorsum of the nose along with nasal obstruction. The obstruction became complete, and the sense of smell was lost. There was no history of trauma or infectious diseases.

Physical examination revealed the dorsum of the nose to be greatly swollen and painful to palpation. There was bilateral obstruction of both nares by a fluctuant swelling of the septum. The rest of the physical examination was essentially negative. The blood count showed a moderate degree of anemia. The serologic test for syphilis was negative. A culture of the septal abscess showed non-hemolytic **Staphylococcus aureus.**

Penicillin was given throughout the patient's hospitalization. On the day of admission, the left side

of the nasal septum was incised and approximately 20 cc. of pus and several pieces of necrotic cartilage were aspirated. The mucoperichondrial flaps were greatly thickened, and the entire nasal septal cartilage was found to be destroyed. Edges of the vomer and perpendicular plate of the ethmoid were visible through the incision of the abscess cavity, but did not seem to be eroded. A piece of thin rubber was placed in the incision to act as a drain and also to hold the mucoperichondrial flaps apart. The rubber drain was changed daily for the next two days and the abscess cavity irrigated with a solution containing 5,000 units of penicillin per cubic centimeter. On the third day, granulation tissue covered the inner surface of the mucoperichondrial flaps, and there was an absence of pus. The granulations were removed with a periosteal elevator, and the small amount of bleeding which occurred was controlled by applying bovine thrombin. An isograft of nasal septal cartilage measuring 2.0 by 2.5 cm. was placed between the mucoperichondrial flaps and held in place by a 4-0 chromic catgut suture that passed through the mucoperichondrial flaps and cartilage. Rubber drains, which were placed in each side of the nose to hold the flaps against the cartilage graft, were removed at the end of 24 hours. The swelling and tenderness over the dorsum of the nose rapidly disappeared, and by the eighth day following the cartilage implant the patient was again breathing through both nares. Following discharge from the hospital, she was seen at frequent intervals. Three months after the cartilage implant there was no deformity of the nose. The septum appeared to be of normal thickness and firmness.

Summary

The etiology, incidence, and treatment of septal abscess have been reviewed and the treatment of 3 cases presented. The first patient was seen before marked destruction of the septal cartilage had occurred. Incision and drainage, along with the use of antibiotics, resulted in healing without a nasal deformity. The second patient was seen after destruction of the septal cartilage, and following an accepted form of treatment, a saddle deformity developed. The third patient likewise was seen after destruction of the septal cartilage. However, in this case an isograft of septal cartilage was used and a saddle deformity did not develop. One might assume that the cartilage graft prevented a deformity of the nose. Even if one assumes that it was a mere coincidence that a deformity did not develop and that the cartilage graft played no important part, it is noteworthy that a graft was succesful in what three days previously had been an infected area.

While conclusions cannot be drawn from one case, the use of cartilage graft in the treatment of septal abscess is presented as a possible means of preventing the development of a saddle deformity.

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Discussion

Dr. Larry Turner (Raleigh): There is no doubt that the treatment of septal abscess has been greatly advanced by the sulfonamides and antibiotics. I was wondering whether you would consider it sound surgical practice to introduce a graft in a recently infected cavity? Personally, I would prefer to wait for three or four months.

Dr. Al Davidson (New Bern): Why does the patient wait until the cartilage is completely destroyed before seeing a doctor?

Dr. Ralph Arnold (Durham): Nasal obstruction does not bring people to the doctor very often. Even when they have some pain in the vicinity of the nose they think it is due to a cold which will be better soon. All the cases we have ever seen have had a pre-existing hematoma—whether the result of trauma or surgery, I do not know. I have never seen any from any other cause.

Dr. Robert Bradish (Fayetteville): I concur with Dr. Arnold. That is the only kind I have seen.

I am inclined to agree with Dr. Mills that nothing is lost by attempting the early isograft of septal cartilage. It is only at that time that one still preserves the lines of cleavage with anything representing normality. He is to be congratulated on being daring enough to insert it at that time.

Dr. Carl N. Patterson (Durham): There is one thing I would like to point out. In some cases it might be possible to predict whether or not a saddle nose would develop. I am referring to the interrelationship of the upper and lateral cartilages. It is when the surgeon goes too high that a saddle nose may develop. If the upper lateral and lower lateral cartilage are closely applied, the septum, I believe, does not play a great role in support, as Fomon has pointed out; but where a weak triangle is formed—where the septum is felt just under your finger when you palpate it—a saddle deformity is most likely to result from a high septum operation or a septal abscess.

I would be hesitant to put an isograft in a potentially infected cavity.

Deaths from all forms of tuberculosis in 1949 are estimated to have numbered 39,000. The estimated death rate of 26.2 per 100,000 population is 9 per cent lower than the rate for 1948, after allowance is made for the changes in classification procedure. A further decrease of approximately 15 per cent appears to have occurred in 1950. Changes in mortality from both respiratory tuberculosis, which accounts for 93 per cent of the deaths, and nonrespiratory forms of the disease contribute to the decreases.—Evelyn H. Halpin and Otis D. Turner, Pub. Health Reports, May 4, 1951.

EXPERIENCES WITH THE PAPANICOLAOU SMEAR

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In July, 1947, a cytology laboratory for the detection of carcinoma in the female genital tract by the use of the Papanicolaou smear was established at the Charlotte Memorial Hospital. The response was small at first, even though the smears were read free of charge and a jar of fixative was provided for the asking. In 1949 a charge of $2.00 per patient was imposed. In spite of this, interest in the clinic continued to grow, and the number of smears submitted annually has increased each year since then (table 1).

Several years were required for the physicians of Charlotte and the laboratory personnel to acquire confidence in the use of the method. During those early years the laboratory often requested smears from patients known to have malignant lesions, to be used for teaching purposes. For this reason, the results obtained during the first three and one-half years were not deemed worthy of reporting.

Having now achieved through time and experience reasonable confidence in the use of the Papanicolaou smear for the detection of cancer of the cervix, we wish to present the results of our examination of smears made on 4,823 women between January 1, 1951, and March 31, 1952. These smears were not secured through a specific cancer detection clinic, but represent a random sampling of the female clientele of a large proportion of the practitioners of Charlotte.

Results

Of the 4,823 women included in this series, 75 had positive smears—an incidence of 1.55 per cent. Of these 75 positive smears, 56 were reported by this laboratory as grade IV (positive for malignant cells), and 19 as grade III (suggestive, but not diagnostic, of malignancy). In 56 of the 75 patients with positive smears, biopsy showed either invassive or pre-invasive carcinoma. Thus the finding of a positive smear was proved to be of diagnostic significance in 74.7 per cent of the cases (table 2).

Table 1
Number of Cases in Which Vaginal Smears Were Examined by the Papanicolaou Technique at the Charlotte Memorial Hospital

1947 (July-December)	186
1948	1,327
1949	902
1950	1.340
1951	2,893
1952 (January-March)	1,930

If the grade IV and grade III smears are analyzed separately, we find that 47 of the 56 grade IV smears (84 per cent) were confirmed by biopsy, while only 9 of the 19 grade III smears (47.4 per cent) have been confirmed.

Significance of Grade III Smears

It is debatable whether the grade III smears should be classified as positive and included in the statistical evaluation; however, experience has taught us that a grade III smear cannot be disregarded. Two brief case reports illustrate this point.

*Case 1**

The patient was a 46 year old woman seen in 1950 for a routine examination and treatment of a trichomonal infection of the vagina. The cervix was completely normal to inspection and palpation. A routine vaginal smear was reported as grade III or suspicious, and a second smear made one week later was classified in the same manner. Two weeks later, however, a third smear was reported as negative. Contrary to our present practice, no further investigation was done. This patient was not seen again until March 18, 1952. At that time the cervix was still normal to clinical examination, but the vaginal smear was positive for malignant cells. The histopathologic examination revealed a stage I invasive carcinoma of the cervix.

Case 2†

The patient was a 30 year old woman seeking contraceptive advice. Examination showed a small circumoral erosion of the cervix. A routine smear made in February, 1952, was reported as grade III, or suspicious. A repeat smear one week later was reported as grade IV, or positive for malignant cells. Two further smears made at weekly intervals were reported as negative, and then a fifth smear as suspicious. Biopsy on April 12, 1952, disclosed intraepithelial carcinoma.

From the Department of Obstetrics and Gynecology and the Department of Cytologic Pathology, Charlotte Memorial Hospital, Charlotte, North Carolina.

Read before the Section on Gynecology and Obstetrics, Medical Society of the State of North Carolina, Pinehurst, North Carolina, May 7, 1952.

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* Courtesy of Dr. Glenn Edgerton.
† Courtesy of Dr. Ledyard DeCamp.

Table 2

Results of Papanicolaou Smear Examinations at the Charlotte Memorial Hospital January, 1951-March, 1952

Total cases	4,823	
Total cases with positive smears		
Grade IV — 56		
Grade III — 19		
	75	
Positive smears confirmed by biopsy	56	(74.7%)

Analysis of Unconfirmed Positive Smears

Analysis of the 19 unconfirmed positive smears (table 3) shows that 9 are apparently false positives, since thorough investigation has failed to disclose the presence of a malignant lesion. Four of these were grade IV smears and 5 were grade III smears. We have classified the other 10 smears in this group as unproven false positives. In 5 of these cases the investigation, in our opinion, was not sufficiently thorough to exclude the possibility of malignant disease; in 1, the pathologist reported only "atypicalities" in the biopsy specimen; and in 4 the clinician has not seen fit to make any further investigation. In these 4 cases the initial smears were all reported as grade III.

The incidence of false positive smears is thus either 0.186 per cent or .083 per cent depending on the interpretation. The incidence of false negative smears is entirely unknown at this time.

Clinical Classification of Cases with Positive Smears

Clinically, we divided the 75 cases with positive smears into four groups. In group A we included totally unsuspected cases—those with a negative history and physical examination. There were 15 cases in this group. In group B we placed unsuspected cases with a negative clinical history but with physical findings suggesting cervicitis. Thirty-six cases fell into this group. Group C was made up of 5 cases with a suggestive clinical history but no positive physical findings. In group D we included the 19 cases in which cancer had been suspected from the clinical history and which presented positive findings.

In classifying these cases we accepted the judgment of the clinician, realizing that there might be differences of opinion regarding the significance of the visual appearance of the cervix.

Table 3

Analysis of Positive Smears Unconfirmed by Biopsy in 4,823 Cases

Proven false positive			
Grade IV	4	(.083%)	
Grade III	5		
		9	(0.186%)
Unconfirmed false positive			
Inadequate investigation	5		
Pathologist undecided	1		
Uninvestigated	4		
	10		
Total of unconfirmed positive smears		19	

The 51 cases in groups A and B are the ones which interest us most, for it is in the unsuspected case of cancer, where a biopsy would not usually be done, that the Papanicolaou smear technique renders its greatest service. This ability to ferret out early carcinomas in the most benign-appearing cervices, we believe is sufficient justification for the vaginal smear. In this group of women, 36 out of 51 positive smears were confirmed by biopsy—a diagnostic accuracy of 70.6 per cent. Thirty of these cases were diagnosed as pre-invasive, and 6 as invasive carcinomas.

These 36 cases of carcinoma of the cervix would not have been found without the use of the vaginal smear. We estimate that, at $2.00 per smear, $9,646 (approximately $268 per case) was spent in discovering these cases. This cost is certainly not excessive.

Comment

On the basis of our experience with the Papanicolaou smear, the following observations are offered:

1. To be most effective the vaginal smear must be used routinely and not in a hit-or-miss fashion. The theoretical ideal of examining a smear from every woman once every year from the onset of menstruation is impossible because of the lack of trained cytologists. We recommend therefore, that vaginal smears be made routinely on the following groups of women: (1) all women over 30 years of age; (2) all women with symptoms of gynecologic disorders such as discharge and irregular bleeding; (3) all women with a lesion of the cervix, no matter how insignificant.

Two smears, one from the vaginal canal, and one directly from the cervix, should be taken in each case.

2. When any patient has a Papanicolaou smear reported as grade III or grade IV,

thorough investigation is mandatory. We do not believe that punch biopsies, either single or multiple, are sufficient. In our opinion, biopsy is adequate only if the entire squamo-columnar junction of the cervix is removed and a separate curettage of the endocervix is done. It is vital that the surgeon label this tissue adequately for the pathologist, for only in this way can the latter make the all-important decision as to the presence or absence of invasion. The Papanicolaou smear alone is not sufficiently reliable to serve as the basis for treatment.

Summary and Conclusions

Since January, 1951, vaginal smears from 4,823 women have been examined at the Charlotte Memorial Hospital. Seventy-five patients were found to have positive smears (grade III and IV), and in 56 of these cases biopsy confirmed the presence of a malignant lesion.

In our opinion, the Pananicolaou smear is reasonably accurate, not too expensive, and definitely useful in the detection of early carcinoma of the cervix. It is not intended to supplant clinical examination of the cervix and cervical biopsy. Used correctly, however, it will disclose cases of early carcinoma of the cervix which would not otherwise be found, at a reasonable cost and with a minimum of discomfort to the patient.

The work of Miss Sarah Hodges, who screened the smears, is gratefully acknowledged.

Discussion

Dr. W. Kenneth Cuyler (Durham): Because of various factors which may be involved, demonstration of the reliability of the Papanicolaou smear occasionally fails. For example, it is good practice to make repeated smears to check interpretations of malignancy or questionable malignancy. The failure of repeated cytologic or pathologic studies to verify the original cytologic interpretation does not mean, necessarily, that the original report was in error. In many instances when repeated smears contain few or no suspicious cells over long periods of time, pathologic studies may ultimately confirm the original smear interpretation of malignancy. In some cases smears from patients with clinical cervical carcinoma, and even from patients with open, active, metastatic lesions in the vagina may not contain recognizable cancer cells.

It is difficult to account for the vagaries in the presence of cancer cells in smears. Their appearance is influenced by factors both extrinsic, such as douches, and intrinsic, such as the rate of desquamation and the area of the exfoliating surface. The fact that there may be wide variation in the number of tumor cells present should be remembered by clinicians, especially when smear studies are repeated in order to check former cytologic reports or the results of therapeutic measures.

It is gratifying to know that the authors employ the cervical smear. At the present time, there is a trend to rely on a vaginal smear for cancer detection. Many workers in numerous laboratories have found the single vaginal smear far inferior to the cervical smear for the identification of neoplastic changes.

The low incidence (0.4 per cent) of grade III smears in these 4,823 patients shows that this category has not been a waste basket for all smears containing atypical epithelial elements about which some doubt was entertained. It has been the custom, in a number of laboratories, to relegate every doubtful smear to grade III and let it go at that. Because of the low incidence of grade III smears and of false positive errors in this series, I feel that, in all probability, a number of the unconfirmed grade III interpretations reported in this paper will eventually be confirmed. It is not unusual to follow patients with grade III smears for months or even years before a final pathologic confirmation is made.

When the exfoliative cytologist renders a considered interpretation of atypical epithelium, it becomes the responsibility of the clinician and pathologist to confirm the presence of malignancy or rule out the probability of its existence. This may be a problem for each.

The clinician must obtain tissue from which a satisfactory diagnosis can be made. The punch biopsy method has missed 14 per cent of the 151 intra-epithelial carcinomas in our series. Conization specimens may miss lesions in portio vaginalis epithelium, or lesions arising deep in the glands; yet it is probably the method of choice for establishing the presence or absence of non-invasive or invasive carcinoma.

Inadequate pathologic studies may fail to disclose lesions present in any material obtained by any diagnostic procedure; yet lack of technical help may make it impossible for the pathologist to study each specimen adequately.

It is felt that a pathologist should not be censured for the diagnosis of atypicalities, since the criteria for the pathologic diagnosis of intra-epithelial carcinoma often are not clear-cut. Furthermore, cases are frequently seen in which only atypical epithelium does exist. On the other hand, the atypicalities recorded in one case of the present series may have been associated with non-invasive or invasive carcinoma which was not sampled by the diagnostic procedure.

When the clinician is not satisfied with the pathologic diagnosis in cases where a cytologic interpretation of malignancy has been made, he should, if it is at all feasible, secure additional tissue for study.

I realize that this paper deals primarily with false positive cytologic interpretations. Theoretically, the false negative error is an unknown entity. Yet the customarily accepted figure which is derived from the number of cases with negative smear findings in which malignancies were diagnosed by pathologic studies (those smears in which the lesion was missed) seems necessary to complete this review of the authors' experience with the Papanicolaou method. This error would have allowed not only additional evaluation of the procedure, but also an evaluation of the false positive error given.

I must take exception to the recommendation that cytologic studies be limited to patients aged 30 years or over. In our series of 151 intra-epithelial carcinomas, 22, or 21.1 per cent of the total, occurred in women from 20 through 29 years of age; 12 lesions, or 7.9 per cent, occurred in girls less than 25 years of age. In our series of 566 squamous-cell cervical cancers diagnosed over a five year period 28, or 4.9 per cent, occurred in women from 20

through 29 years of age; and 4 lesions, or 0.7 per cent, occurred in women less than 25 years of age. We believe that each obstetric and gynecologic patient should have the benefit of cytologic studies when she comes in for examination.

Dr. Glenn Edgerton (Charlotte): I would like to say something about these grade III smears. I am of the opinion that, since our cytologic laboratories have become more accurate in these diagnoses, a patient who has two consecutive smears suggestive of malignancy should be hospitalized for an extensive biopsy. Valuable time can be lost in making subsequent smears after two grade III smears have been obtained.

I would also like to comment on cervical biopsies. I never have been satisfied with the cervical biopsy specimens which I have removed. I have tried practically all methods; but, especially in these patients who have positive or suggestive smears, I believe that conization, extending all the way down to the internal os, is the most suitable method of obtaining material for biopsy.

Dr. Jesse Caldwell (Gastonia): According to Dr. Huey's figures, 36 of the 75 patients with positive smears had a visible cervical lesion; 5 patients had symptoms suggestive of malignancy; and in 18 cases the diagnosis was fairly obvious from the history and physical findings. Thus, in 59 out of 75 cases there was some reason to pursue the investigation further. I believe that in such cases it is preferable to perform a biopsy and curettement in the beginning.

In only 15 cases, then, was totally unsuspected malignancy disclosed by the cytologic smear, and the cost of diagnosing these cases would be raised to approximately $643 per case.

Dr. W. L. Thomas (Durham): Apparently, it is cheaper to diagnose early cancer of the cervix in Charlotte than it is in Boston. As I understand it, Dr. Huey, your group has spent around 200-odd dollars. Dr. Meigs, in Cincinnati, reported that it cost him $900 or more to make an early diagnosis of cancer of the cervix. Seeing, as I do, about 150 new patients with cancer of the cervix each year, I feel that we would give almost any amount of money to cure them. Therefore, I think the monetary aspects of this matter should be disregarded.

Functional Disease: Restaurant and tavern owners are frequently seen by the physician because of functional disease; more specifically, owners of small restaurants and taverns. In a relatively small establishment the proprietor tends to spend most of his waking hours at his place of business. There are laws to protect the employees, but the owner-manager works on. Meals are irregular and hurriedly eaten; there is a tendency to smoke and drink too much. It is not hard to understand why dyspepsia is the symptom most commonly complained of. When the family living quarters are directly adjacent to, or above the place of business, the ratio of nervous disorder increases. Owners of small grocery stores and filling stations work under similar conditions and are similarly afflicted.—Lovshin, L., L.: Benign Nervousness, Ohio State M.J. 26: 272 (Oct.) 1950.

EARLY NORTH CAROLINA MEDICINE

Physicians of the Colonial Period

Part II

DOROTHY LONG

LEXINGTON, KENTUCKY

Another politically active physician, Dr. Abraham Blackall, was one of the witnesses in the complaints of the colonists against Governor Gabriel Johnston in 1749. On April 19, there was filed "The Deposition of Abraham Blackall of Edenton in North Carolina, Practitioner in Physic and Chirurgery being forty three years of age."[1] He stated in this deposition that he had come to North Carolina in the year 1730 and that in 1734 he had received a commission as clerk of the House of Burgesses.

The journals of the sessions of the assembly, also printed in the Colonial Records, show that Dr. Blackall was on the committee for public claims of the lower house of the assembly in 1740, and that he introduced several bills, some of which reflect his professional interests. Among them were: "A Bill appointing Coroners in every County of this government and declaring the duty of said officers," and "A Bill for registering of Christnings, Marriages & Burials, and prohibiting private burial." Both of these bills seem to have been passed by the assembly, but on February 12, 1740, Dr. Blackall "moved for leave to bring in a Bill for an act to prevent the abuse of practisers of Physick and Chirurgery, and to Ascertain their fees,"[2] and this apparently did not become a law. In addition to being a member of the general assembly of the colony, Dr. Blackall was also one of the commissioners of Edenton and of its town lands.

The list of officers and men of the New Hanover troops commanded by Captain William Mackenzie in 1748 includes Samuel Greene, Surgeon. Spanish cruisers at that time made several raids on the Carolina coast, one of them at Brunswick on September 4, 1748. In this battle a Spanish ship was blown up, and some wounded or badly burned Spanish soldiers were turned over to Dr. Greene for treatment. As he presented a

*Assistant reference librarian, University of Kentucky, Lexington, Kentucky.

claim against the government for their care, some details of the treatment were given. His bill, presented September 23, 1748, is for medicines, dressing, and diet of the Spanish prisoners. Some quotations from it follow:

"To medicines and dressing of Joseph Sallad . . . whose face, ears, neck, breast, belly and both legs, quite round and deep from knee to ankle, very much burned, as also both hands very deep, taking at least one hour every day to dress him, whose cure I believe will be completed about the last of September . . ."

"To one Senitive Mixture, being exceeding costlie."

"To medicines and dressing of Francisco De Strades, of a Gun Shot wound, the Ball entering on the fore part of the right shoulder, going under the blade and lodging near the Right Kidney . . . whose cure I believe will be perfected about the 2d of October."

"To Francisco Gonsallis, being sick."

"To a large pectoral Electuary, 12 doses."

"To two suppurating Cataplasms."

"To Emolient Ointment."

The bill for the care of these and three other men included food and nursing care as well as medical attention, and the total charges were 143 pounds, 10 shillings.[3] The word *senitive* is perhaps a misspelling of *sanative*, and the "suppurating Cataplasms" may indicate that Dr. Greene believed the once widely prevalent theory that "laudable pus" was necessary to the healing of wounds.

By the latter half of the eighteenth century Wilmington had become a town of sufficient size to need a number of doctors, and Janet Schaw, in *The Journal of a Lady of Quality*,[4] writing of her visit there in 1774, says that there were very good physicians. She mentions Dr. Thomas Cobham most often, but two others of whom we have some accounts are Dr. John Eustace and Dr. John Fergus. McRee, in the *Life and Correspondence of James Iredell*, describing the society of Wilmington in the 1760's, mentions "Dr. John Eustace, the correspondent of Sterne, who united wit, and genius, and learning, and science," and "Dr. John Fergus, of stately presence, with velvet coat, cocked hat, and gold-headed cane, a graduate of Edinburgh, and an excellent Latin and Greek scholar."[5]

Dr. Eustace is said to have had a library, largely medical, but also containing works of general literature, obviously including those of Laurence Sterne, to whom he sent " a curiously carved walking stick, double-headed and twisted into all sorts of shapes,"[6] accompanied by a letter, a copy of which, with Sterne's reply, was found among the papers of Judge Iredell and reproduced by McRee. The date of Dr. Eustace's letter is not given, but Sterne's very grateful answer is dated February 9, 1768. After introducing himself as a great admirer of *Tristram Shandy*, the colonial physician explained the occasion for his odd gift. "The only reason that gave rise to this address to you is my having accidentally met with a piece of Shandean statuary—I mean according to the vulgar opinion; for to such judges, both appear equally destitute of regularity or design. It was made by a very ingenious gentleman of this province, and presented to the late Governor Dobbs; after his death Mrs. Dobbs gave it to me. Its singularity made many very desirous of possessing it, but I had resolved, at first, not to part with it, till, upon reflection, I thought it would be a very proper and probably not an unacceptable compliment to my favorite author, and in his hands might prove as ample a field for meditation as a buttonhole or broomstick."[5]

As Dr. Eustace appears to have taken little part in politics, few references to him are found in the Colonial or State Records, but that he was held in high esteem as a physician is suggested by a statement in one of the letters to George Hooper from Archibald Maclaine, much of whose correspondence has been preserved. Writing on February 16, 1782, from Wilmington, Maclaine says of a certain Dr. Ingram, "I am sure he is infinitely preferable to any we have here, or any we have had since Eustace's death."[7]

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"The prime object of the medical profession is to render service to humanity; reward or financial gain is a subordinate consideration. Whoever chooses this profession assumes the obligation to conduct himself in accord with its ideals."—Principles of Medical Ethics of the American Medical Association, Chapter 1, Section 1.

OCTOBER, 1952

POSTGRADUATE EDUCATION IN NORTH CAROLINA

On page 584 of this issue is an important news note from the University of North Carolina, stating that a combined staff conference will be held every Wednesday afternoon at 4 o'clock. All physicians are invited to attend this conference and to participate in the informal question-and-answer part of the program.

Duke and the Bowman Gray Schools of Medicine have for years offered similar postgraduate opportunities to interested physicians. At Duke a clinicopathological conference is given every Saturday morning at 11. Bowman Gray's CPC is held on Monday night at 8 o'clock and is preceded by a half-hour's presentation of interesting cases.

These regular weekly conferences offered by our three medical schools, together with the district meetings and the many other annual programs arranged in various parts of the state, afford the doctors of North Carolina a wonderful opportunity for continuing postgraduate education.

* * *

NORTH CAROLINA MEMORIAL HOSPITAL OPENS

On September 2 the North Carolina Memorial Hospital—the teaching hospital of the University of North Carolina four-year medical school—opened its doors for the admission of patients. This marks a significant chapter in the history of medical care and medical aducation in North Carolina. The first class of third year medical students entered the University this fall, and more than 40 house officers — interns and residents — have been waiting since July 1 for the opening of the hospital. During the interval these young doctors have been serving at Duke, the North Carolina Baptist Hospital, and other hospitals on a sort of lend-lease arrangement.

The hospital staff is as follows:

ADMINISTRATION

Dr. Robert R. Cadmus, Director
Mr. E. B. Crawford, Jr., Assistant Administrator
Mr. Joseph P. Greer, Assistant Administrator

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Dr. Thomas T. Farmer, Professor of Neurology in Medicine
Dr. Louis G. Welt, Associate Professor (Metabolism)
Dr. John T. Sessions, Jr., Assistant Professor (Gastroenterology)
Dr. Ernest Craige, Assistant Professor (Cardiology)
Dr. Jeffress G. Palmer, Assistant Professor (Hematology)
Dr. Oscar A. Thorup, Jr., Fellow (Metabolism)
Dr. Janet J. Fischer, Fellow (Virology)

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Dr. Paul L. Bunce, Assistant Professor of Surgery (Urology)
Dr. Newton D. Fischer, Assistant Professor of Surgery (Otolaryngology)
Dr. Richard M. Peters, Assistant Professor of Thoracic Surgery.
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Dr. Colin G. Thomas, Jr., Assistant Professor of Surgery

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Dr. David Hawkins, Instructor in Psychiatry

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Dr. Margaret C. Swanton, Instructor in Pathology

Dr. June U. Gunter, Instructor in Pathology

Dr. William J. Cromartie, Associate Professor of Bacteriology and Director of Bacteriological Laboratory

Dr. Robert H. Wagner, Research Associate in Pathology and Biochemistry

DEPARTMENT OF ANESTHESIOLOGY

Dr. David A. Davis, Professor of Anesthesiology and Head of Department

Additional appointments are being made to complete the full clinical staff. Appointments in neurosurgery and ophthalmology are currently pending.

On behalf of the doctors of North Carolina the *North Carolina Medical Journal* extends congratulations and best wishes to our state University as its medical school expands into a four-year institution, and to its indispensable teaching unit, the North Carolina Memorial Hospital.

* * *

BRITISH COMMENTS ON AMERICAN MEDICAL EDUCATION

The *British Medical Journal* for August 30 is an educational number. Three of the 11 articles deal with graduate education in America. It is an interesting experience to see ourselves as others see us; or, at least, as our British cousins see us.

Dr. W. Melville Arnott, who wrote the first, spent most of his time in Boston, at Harvard and its teaching hospitals, especially the Massachusetts General Hospital. Dr. Arnott was greatly impressed by the hospitality shown him, as well as by the "free association between staff of all grades of seniority and students both graduate and postgraduate and the easy terms of personal friendship which exerted a profound influence on the outlook of all. . . . In such an environment it is possible to mature quickly and yet to become senior in rank and old in years without becoming dogmatic, pompous, and unreceptive to new ideas."

The intriguing observation was made by Dr. Arnott that such schools as Harvard really need not worry about financial support, for "financial and material support is a secondary acquisition which follows naturally . . . support tends to go to the school which knows how to make use of it."

Dr. Arnott further comments that limiting the numbers of students to relatively small classes is of great value in a teaching program, since "The free interchange of ideas, the exhaustive debate, and the intimate contact is impossible with large classes." Other features which came in for commendation were the clinicopathological conferences, the "grand rounds," and the intense enthusiasm of teachers, house officers, and students.

In his final paragraph, Dr. Arnott pays tribute to American education generally: "Although I have confined myself largely to experiences in Boston, I found in my briefer

visits to many other clinical centres, such as Rochester, N. Y., the Trudeau Foundation, the Mayo Clinic, Minneapolis, New Orleans, Birmingham, Ala., Duke University at Durham, N. C., Johns Hopkins Hospital, University of Pennsylvania Hospital, and the Presbyterian and the Bellevue Hospitals in New York, the same invigorating intellectual climate and excellence of clinical practice."

Another traveling fellow, Dr. C. F. Hawkins, spent most of his time in America at the graduate Hospital of the University of Pennsylvania. He, too, was complimentary, but more critical than was Dr. Arnott. "In Britain the clinical approach and good bedside teaching are characteristic, whereas in America the laboratory aspect is highly developed." Immediately, however, he qualified this generalization by saying that it does injustice to many outstanding American physicians "whose clinical acumen is above reproach," as well as to the numerous centres in Britian "where there is a perfect blend of the clinical and scientific approach."

Dr. Hawkins was quite impressed by the audiovisual aids used in medical teaching in the United States, and with the emphasis placed upon the need for keeping up with medical advances.

In the editorial section of the same Journal, an "Annotation," discussing "Study Abroad," gives the advantages of visiting medical centers in other countries: "Nor is there anything quite like contact with the foreign doctor for blowing away a few medical myths, for encouraging a critical outlook through comparing 'ours' with 'theirs,' for becoming a little wiser and more understanding. The number of traveling scholarships and fellowships awarded annually is increasing." Then follows quite a compliment to American medical education: "Many, but not all, of these aids to foreign travel and study take the holder to the United States, and these are naturally the ones most sought after. Two very readable articles in this issue . . . show why British doctors usually find a visit to the United States so stimulating and educative."

This, from the *British Medical Journal*, is indeed praise from Sir Hubert.

* * *

HOW TRUTHFUL IS TRUMAN?

On September 25 an Associated Press dispatch said:

"President Truman said today he thought his Philadelphia speech on medical care for the American people, rather than an American Medical Association victory, caused the A. M. A. to disband its group to set up to fight his national health program.

"The President commented after he was told at a news conference that the A. M. A. was disbanding its special committee opposed to the Truman health plan on the ground that it was no longer necessary.

"Truman said he thought what finished the battle was a certain speech the President made at Philadelphia. He asserted the A. M. A. officials admit now by their action that they have been wrong."

Immediately Dr. Louis Bauer, president of the A.M.A., replied:

"The American Medical Association will never cease its fight against national compulsory health insurance. Mr. Truman's Philadelphia speech had no bearing whatsoever on the decision to disband a special committee set up to conduct an intensive short-term, educational program against socialized medicine. This decision was reached by the A. M. A. House of Delegates last June, and was widely publicized at the time.

"The National Education Campaign was merely one intensive phase in the medical profession's long-range effort to keep medical care on a voluntary basis. This effort will continue as long as attempts are made to shackle people's health in bureaucratic red tape.

"Mr. Truman is naive indeed if he believes that any speech he delivers could change the medical profession's basic beliefs concerning high quality medical care."

On October 7 Mr. Raymond Moley commented on another speech by our President.

"President Truman in his speech at the dedication of the Hungry Horse Dam in Montana was at his most unscrupulous worst . . he provided an example of recklessness which I hope will never be repeated by any President . . .

"The solid fact emerges that the President of the United States, standing upon the eminence offered him by his high office, is crossing the country scattering on all sides not only the cheapest sort of demagogic comments, but actual violations of the simple truth."

Since President Truman has been quick to accuse his opponents of telling lies and even "damned lies," John Q. Citizen may be pardoned for asking the question, "How truthful is Truman?"

PUBLIC RELATIONS

"The prime object of the medical profession is to render service to humanity..." so reads the first sentence of the Principles of Medical Ethics. In keeping with these principles, the objective of any echelon of the medical profession should have as its aim: to improve physician-patient relationships by encouraging the individual physician to administer his services promptly, efficiently, and courteously, with understanding of the patient as an individual. Most Tar Heel physicians are aware of their need to carry on good personal public relations with their patients.

The physician also has a responsibility as a citizen. By the very nature of his background he is an objective student of the human body in health and disease. The same kind of objective approach could logically fit into a diagnosis and treatment of the ills of a community. But there are instances where physicians in the past have denied themselves the privileges and opportunities for civic service. Ever increasing community service will convince people that the physician is vitally concerned with the public good and that his thoughts on controversial subjects are important to all.

Much has been said in the past year or so about the need for an objective public relations program by each of the county societies of the medical profession in North Carolina. Several county medical societies recently have adopted measures leading to a better understanding between the public and the doctors. However, others must realize that an intelligent and energetic program of public relations will do much to strengthen the confidence of the public in the profession. Such a program automatically generates increased prestige—a matter of primary importance to the progress of the local societies.

The medical service program of the State Society's Committee on Public Relations includes among other things the following six major objectives:

1. Encouraging the selection of a family doctor for every person in every county before an emergency arises.

2. The establishment of Emergency Call or Answering System in communities of adequate size.

3. Medical-Press-Radio-Civic Leader conference or luncheons, to foster a better mutual understanding of the other fellows problems.

4. Establishment of Medical-Press-Radio Code of Ethics or Code of Cooperation, worked out on a county basis or community area.

5. Establishment of County Medical Society Speakers Bureaus and the organization of plans for the utilization of such bureaus; keeping in mind that the public may not understand the outstanding scientific or medical paper, but still expect an interesting presentation from a physician.

6. Promotion of the sale of Voluntary Health Insurance. Local encouragement of the sale of the "Doctors' Plan" as a sincere effort on the part of North Carolina's physicians to offer protection to the lower income families against catastrophic illness.

The idealistic attitude of doing a good job and letting the credit take care of itself becomes passé when adopted by an organization operating in the high pressure atmosphere of today. Not only is it desirable that the group attract to itself as much favorable attention as possible; it is further advisable for it to dramatize its service and accomplishments in such a way that they will have maximum personal meaning to as many individuals outside the profession as possible. The organization which lets its light so shine before men that they may see its good works will be glorified.

The job of influencing public opinion, meanwhile, is not one that can be done overnight. A good strong editorial in next week's paper won't do it, nor will a series of radio programs — not any more than one rock thrown into a lake will raise the water level significantly. Yet, in the words of Congressman Walter H. Judd, M.D., of Minnesota, "The thing that's moving wins. The drop of water wears away a stone, but the thrown stone breaks the surface of the water."

Abraham Lincoln summed it up in the statement: "Public sentiment is everything. With public sentiment nothing can fail; without it nothing can succeed; consequently he who molds public sentiment goes deeper than he who enacts statutes."

Public opinion, except in dramatic cases of common disaster or international outrage, is inclined to change slowly. It can be done

without great subtlety, but not without continuity and persistence.

All public relations are not based on publicity, but good publicity is a part of good public relations. More and more county medical societies are finding that press conferences or luncheons can be helpful as a means of stimulating understanding and cooperation with the fourth estate.

At a recent meeting of the A.M.A. Public Relations Advisory Committee the subject of how to handle unfavorable articles, especially newspaper stories, was discussed at some length. Director of Press Relations, John L. Bach, says the subject primarily concerned stories dealing with the medical profession or medical policies; not medical science stories.

Mr. Bach states: "The concensus of the committee was that letters to the editor were usually valueless. A friendly personal call on the editor immediately after such an article appears, acquainting him with the true facts, was felt to be the most effective. It is very obvious that an editor will appreciate the medical society's cooperation and will be perfectly willing to print the facts in follow-up stories. Such a meeting, too, might provide a springboard for editorial comment," he concluded.

In the words of John Knox, "You cannot antagonize and influence at the same time."

WILLIARD N. HUBBARD
Executive Assistant
for Public Relations

Lilly Isolates New Antibiotic

A promising new orally administered antibiotic, effective against a wide variety of organisms and remarkably free of toxic effects, is reported in the June issue of the journal, **Antibiotics and Chemotherapy**. The name 'Ilotycin' (Erythromycin, Lilly) has been given the new agent which is a discovery of the Lilly Research Laboratories. 'Ilotycin,' which climaxes a five-year program of intensive research in this field, is obtained by culture of an actinomycete isolated from a sample of soil collected in the Philippine Islands.

Preliminary clinical trial has been carried on in more than 100 patients without appearance of gastrointestinal disturbances seen with some other antibiotics and without evidence of toxic effects or sensitization reactions.

The new antibiotic does not destroy the colon bacillus in the intestinal tract and thereby the normal flora of the bowel remains unaffected.

Although clinical trials look encouraging, several months will elapse before 'Ilotycin' is thoroughly investigated and considered ready for general distribution.

BULLETIN BOARD

NEWS NOTES FROM THE DUKE UNIVERSITY SCHOOL OF MEDICINE

Infant mortality in six major premature centers in North Carolina has been cut one-half as a result of the course in nursing care in cooperation with the Duke University School of Nursing, Dr Robert J. Murphy, pediatric consultant, State Board of Health, said recently. The course at Duke began last fall, sponsored by the North Carolina Pediatric Society and administered by the State Board of Health.

Although there were 8,953 premature infants born, representing 8.1 per cent of total births, in North Carolina during 1951, infant mortality was cut in half at Duke and Watts Hospitals, Durham; North Carolina Baptist Hospital, Winston-Salem; Parkview Hospital, Rocky Mount; James Walker Hospital, Wilmington; and Victoria Hospital, Asheville, Dr. Murphy reports.

* * *

The Sixty-fifth General Hospital Unit will celebrate its tenth anniversary of call to active duty with a reunion at Duke University, October 31-November 1, according to an announcement by Dr. Ivan Brown, acting general secretary. This will be the second reunion since the Duke unit was assigned to active duty in July, 1942. Most of the 170 present and former officers and nurses of the unit are expected to attend the two-day program.

Since the war the Sixty-fifth has been established as a permanent Reserve Army Hospital unit.

The Sixty-fifth originated during World War I, as the Sixty-fifth Base Hospital, comprised of North Carolinians serving under the late Dr. Frederic M. Hanes, professor of medicine at Duke Medical School.

Highlight of the program will be an address by Brigadier-General Rawley Chambers, chief of professional services, Surgeon General's Office, on ent Day Handling and Care of Casualties in the Korean War."

* * *

The American Academy for Cerebral Palsy, a top national group of medical specialists, held its annual meeting at the Duke University School of Medicine and the North Carolina Cerebral Palsy Hospital, October 2-4. The first day of the meeting was devoted to clinical demonstrations by the staff of the North Carolina Cerebral Palsy Hospital and the second day to scientific papers by members.

Academy membership consists of specialists from over the United States in orthopedics, pediatrics, physical medicine, neurology, psychiatry, ophthalmology, psychology and speech pathology. Only men who have contributed to the medical literature on the subject or who have done research in the field are selected.

* * *

A new 16-ounce tube-mask and half an ounce of a special brand of a common commercial liquid are revolutionizing medical care in minor medical treatment and dentistry at Duke University. The new mask is a Duke inhaler, a simply designed rubber

mask attached to a small cylinder which is held easily in the hand and administered by the patient himself when he feels pain.

The inhaler, designed by Dr. C. R. Stephen, associate professor of anesthesiology at Duke Hospital and Duke Medical School, and George Newton of the Duke Medical Research laboratory, can be used in the doctor's office, in the operating, delivery or emergency rooms, first aid stations, at home, or en route to the hospital.

The clear, blue liquid is "Trilene," a brand of highly purified trichlorethylene, which is used commercially in dry cleaning processes—and was developed as an anesthetic by the British during the war.

News Notes from the University of North Carolina School of Medicine

The staff of the University of North Carolina School of Medicine will hold a combined staff conference every Wednesday afternoon at 4:00 o'clock in the auditorium on the fourth floor of the Clinic Building. Members of the basic science and clinical departments of the School of Medicine, after discussing patients presenting interesting or difficult problems in diagnosis and management, will join with the audience in asking and answering questions relevant to the patient being discussed. A cordial invitation is extended to all physicians to attend this conference. Since the informal question-and-answer part of this program will be emphasized, it is hoped that physicians from all over the state who are in the vicinity of Chapel Hill any Wednesday afternoon will attend and participate in this conference.

* * *

Dr. Ernest H. Wood, professor of radiology, presented a paper on "Some Factors which Affect the Value of Carotid Angiography in the Diagnosis of Brain Tumor" at the annual meeting of the Neurosurgical Society of America in September; he also took part in a panel discussion on "Diagnosis and Treatment of Vascular Anomalies of the Brain."

* * *

Dr. Ernest Craige, of the Department of Medicine, has received a grant of $13,780 from the National Heart Institute for an expanded teaching program in cardiovascular diseases. Dr. Craige met with the Rowan County Heart Association on September 25 and discussed "Progress in Heart Disease Research."

* * *

Dr. Thomas W. Farmer, professor of medicine in neurology, has been awarded a grant of $10,692 by the U.S. Public Health Service for continuation of studies of the use of radioactive iodine preparations in chronic infections.

* * *

Members of the staff were invited to the September meeting of the Ninth District Medical Society at Morganton. Dr. W. R. Berryhill gave the introductory remarks regarding the Medical School and Hospital; other staff participants were: Dr. Ernest Craige, assistant professor of medicine, on "Rheumatic Heart Disease"; Dr. Edward C. Curnen, Jr., professor of pediatrics, on "Rheumatic Fever and Rheumatic Heart Disease in Childhood"; Dr. Robert A. Ross, professor of obstetrics and gynecology, on "Hypertensive Cardiovascular Disease in Pregnancy"; Dr. Nathan A. Womack, professor of surgery, on "Common Pre-and Post-Operative Problems"; and Dr. George C. Ham, professor of psychiatry, on "Minor Neuroses."

* * *

Dr. Edward C. Curnen, Jr., professor of pediatrics, presented a paper on "Recent Advances in Poliomyelitis" at the State Hospital at Butner on October 8 and one on "Recent Advances in Pediatrics" before the Academy of Medicine of Rocky Mount on October 16. During September he took part in meetings of the North Carolina Pediatrics Society and the Guilford County Pediatric Society.

* * *

Dr. Jeffress G. Palmer, of the Department of Medicine, spoke to the Cabarrus County Medical Society on "The Diagnosis and Management of Anemia" at its September meeting.

* * *

Dr. Edward C. Frank, associate professor of psychiatry, attended the Southeastern States Research Conference of the American Psychiatric Association held at Emory University on September 25 and 26.

* * *

Dr. George C. Ham, chairman of the Department of Psychiatry, delivered the annual Whitehead Lecture to the faculty and student body of the Medical School on September 23 as a part of the orientation program for new students. His topic was "Changing Concepts of Integrated Medicine."

North Carolina Academy of General Practice

The North Carolina Academy of General Practice held its fourth annual Scientific Assembly in conjunction with the Bowman Gray School of Medicine of Wake Forest College, in Winston-Salem, October 19, 20, 21, with headquarters at the Robert E. Lee Hotel.

The program at the Hotel featured such outstanding speakers and clinicians as Dr. Robert Greenblatt, Department of Endocrinology, Medical College of Georgia; Dr. Frank Borzell, assistant profesor of Roentgenology, University of Pennsylvania Post-graduate School and past speaker of the House of Delegates of the American Medical Association; Dr. Harry Warthern, professor of clinical surgery, Medical College of Virginia; and Dr. Louis Krause, professor of clinical medicine, University of Maryland Medical School. Many of the outstanding clinicians and professors of the Bowman Gray School of Medicine were featured at the lectures in their amphitheater. Clinical presentations and two clinicopathologic conferences were conducted there. The President's Banquet was held Tuesday evening.

Entertainment for the ladies included a buffet dinner and dance, a tour of Old Salem, and a fashion show.

Durham-Orange County Heart Association

Dr. Paul Dudley White of Boston will be the speaker at the annual meeting of the Durham-County Heart Association on Friday, October 31.

Dr. White will speak informally to Duke doctors at a luncheon held at Duke Hospital. At 3:30 P. M. the amphitheater of the new North Carolina Memorial Hospital will be inaugurated with a panel discission on coronary atherosclerosis, which will be open to all doctors. Participants in addition to Dr. White will be Dr. Paul Camp, Richmond, Virginia, Dr. Edward Orgain of Duke University School of Medicine, and Dr. Bruce Taylor and Dr. Ernest

Craige of the University of North Carolina School of Medicine. At 6 p.m. a small, informal supper will be given for Dr. White at the Carolina Inn.

The annual meeting of the association will be held at Carr Junior High School, Morgan and Duke Streets, Durham, at 8 p.m. Following a short business meeting, Dr. White will deliver a talk on "Three Medical Eras." This session will be open to the public.

On Saturday, November 1, Dr. White will address medical students of the University of North Carolina.

North Carolina Surgical Association

The North Carolina Surgical Association met at Roaring Gap on September 13, at which time the following scientific program was presented: "Chronic Recurrent Pancreatitis" by Dr. Joe Van Hoy of Charlotte; "Subdural Abscess Caused by Frontal Sinusitis" by Dr. William Pitts of Charlotte; and a round table discussion on "Malignant Melanoma" led by Drs. H. B. Kernodle of Burlington, Jane Wilson of Durham, and Max Schiebel of Durham.

Officers elected for the coming year were Dr. L. Gordon Sinclair of Raleigh, president; Dr. F. M. Simmons Patterson of New Bern, vice president; and Dr. Alexander Webb, Jr., of Raleigh, secretary-treasurer.

Carteret County Medical Society

The Carteret County Medical Society met Monday evening, September 8, at the Morehead City Hospital. This was a dinner meeting, the hospital acting as host.

The Public Relations Committee of the Society made a report with certain recommendations. Among the recommendations were:

1. That it be suggested to the new families coming to the county that they select a family doctor and make his acquaintance before illness strikes. This would mean that the family would not be in the position of having to call a strange doctor to the bedside. Several of the physicians present stated that in their experience it was not uncommon for newcomers to do this.

2. That through the hospital 24 hour medical service be available to all patients whether the family physician could be reached or not. (It is understood that this arrangement is now in effect.)

3. That health radio transcripts be sponsored by the Medical Society.

4. That all physicians keep their office waiting room supplied with authentic bulletins on timely health and medical topics which would be free to all patients.

5. That the Society provide a committee known as the Grievance Committee, which would hear complaints on the part of any citizen in connection with hospital or doctor fees, or any other medical matter. These complaints should first come to the attention of the president of the society, and he would refer them to the Grievance Committee for investigation.

The Society approved all of the recommendations of the Public Relations Committee. This committee is composed of Dr. N. Thomas Ennett, chairman, and Drs. F. E. Hyde and John W. Morris.

No scientific paper was presented at this meeting.

Dr. M. B. Morey, president, presided.

N. Thomas Ennett, M.D.
Corresponding Secretary

Forsyth County Medical Society

The Forsyth County Medical Society held a dinner meeting in Winston-Salem on September 9. Speaker of the evening was Dr. W. W. Zuelzer, pathologist and hematologist of Children's Hospital of Michigan and Wayne University College of Medicine, Detroit, whose subject was "Management of Anemias in Childhood."

Edgecombe-Nash Medical Society

Dr. K. D. Weeks and Dr. John Chambliss were speakers at the monthly meeting of the Edgecombe-Nash Medical Society held in Rocky Mount on September 10. Dr. J. B. Christian of Spring Hope was welcomed as a new member.

News Notes

Dr. Walter R. Graham of Charlotte was certified by the American Board of Ophthalomology, following the examinations held in Philadelphia in June.

* * *

Dr. Lockert B. Mason has announced the opening of his offices for the practice of general and thoracic surgery in Wilmington.

American Medical Association

Dr. Louis H. Bauer of Hempstead, New York, president of the American Medical Association, announced today that Dr. Elmer L. Henderson of Louisville, Ky., Chairman of the A. M. A. Coordinating Committee, and Clem Whitaker and Leone Baxter, directors of the A. M. A. National Education Campaign, have resigned their A. M. A. assignments to participate in the presidential campaign.

Dr. Bauer's statement follows:

"Dr. Elmer L. Henderson of Louisville, Kentucky, chairman of the Association's Coordinating Committee, which has supervised the campaign against socialized medicine, has resigned his committee chairmanship so that he may be free to participate in the presidential election campaign.

"Clem Whitaker and Leone Baxter, Directors of the A. M. A. National Education Campaign, have asked to be released from their public relations assignment for the same reason.

"These resignations mark the official termination of the A. M. A. National Education Campaign, which for the past four years has been eminently successful in arousing the American people to the dangers of socialized medicine, and which has played a vital part in accelerating the growth and development of voluntary health insurance. The American Medical Association, on this occasion, wishes to thank the American people for their heartening demonstration of confidence and support.

"The A. M. A., as a nonpartisan, professional organization, is barred, both ethically and legally, from participating in election campaigns, which explains the action of Dr. Henderson and Mr. Whitaker and Miss Baxter in asking for their release from A. M. A. duties. The association will take no part in the presidential election, except to join with other nonpartisan groups in urging all eligible voters to cast their ballots on election day, regardless of their affiliations or preferences. Individual doctors, of course, are entirely free to engage in election activities and, in fact, have a very real responsibility to make their influence felt for good government."

* * *

The sixth annual Clinical Session of the American Medical Association—meeting December 2-5 in Denver—will feature practical demonstrations on various phases of medicine of special educational value

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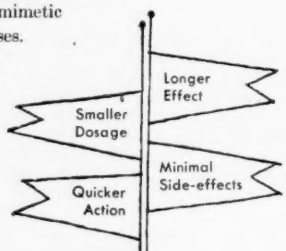

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to the general practitioner. More than 60 scientific exhibits will provide the GP with a postgraduate course in such subjects as office anesthesia, cardiology, dermatology, endocrinology, gynecology, laboratory procedures, otolaryngology, pediatrics and proctology. Emphasis will be on diagnosis and treatment.

In addition to scientific papers presented by leading physicians from all over the United States, highlights of the meeting will include a large technical exhibit, and surgical and clinical demonstrations on color television and motion pictures. All technical and scientific exhibits and scientific sessions will be held at Denver's recently-enlarged Municipal Auditorium.

* * *

A program to interest general practitioners in industrial medicine recently was launched by the joint committee on education of the American Academy of General Practice and the Council on Industrial Health of the American Medical Association. The project proposes to encourage an understanding of industrial health problems by management and physicians and to develop an education program geared to the GP on both the undergraduate and postgraduate level.

* * *

The Committee on Pesticides of the American Medical Association currently is undertaking a country-wide toxicologic study of cases of poisoning resulting from the use of insecticides, rodenticides, fungicides, weed killers, fumigants, repellents and related types of chemicals used in agriculture and the home. This information will be used to expand its permanent file of such cases for use by physicians and allied medical personnel.

Since much of the committee's information on pesticide poisoning has been compiled from unpublished isolated cases which were brought to its attention, the committee appeals to physicians to submit records on cases of non-fatal and fatal poisonings from pesticides. The committee points out that summary data on the pertinent facts of the poisonings and the circumstances of their occurrence would be sufficient in most instances. The committee is functioning as a center for reporting this type of poisoning cases.

American College of Chest Physicians

The fifth annual postgraduate course on the Recent Advances in Diseases of the Chest, sponsored by the Council on Postgraduate Medical Education and the New York State Chapter of the American College of Chest Physicians, will be presented at the Hotel New Yorker, New York City, November 10-14, 1952.

This course is open to all physicians, but the registration will be limited. Tuition fee is $50.00; applications will be accepted in the order in which they are received.

A copy of the prospectus together with an application form can be secured from the Executive Director, American College of Chest Physicians, 112 East Chestnut Street, Chicago 11, Illinois.

This course has been approved for credits by the American Academy of General Practitioners.

National Society for Crippled Children and Adults

Conservation of human resources will be the theme of the twenty-ninth annual convention of the National Society for Crippled Children and Adults to be held at San Francisco's Fairmount Hotel, October 26-29, according to an announcement by Lawrence J. Linck, executive director of the Easter Seal Society.

Hundreds of volunteers and professional workers with the crippled are expected to attend the convention marking the thirty-first anniversary of the National Society. Nationally recognized authorities in all professional fields related to the handicapped will participate in the program.

Davis E. Geiger, Ashland, Kentucky, president of the Easter Seal Society and a nationally known leader in work for crippled children for more than 25 years, will preside at the four-day meeting.

The convention, which will feature general sessions during the morning and seminars for professional workers in special fields in the afternoon, will officially open Monday, October 27, with presentation of the colors by handicapped Girl Scouts of the San Francisco area, followed by a roll call of states.

American Medical Writer's Association

Dr. Walter C. Alvarez of Chicago, nationally known medical editor, author and teacher, has been honored as recipient of the first Honor Award to be given by the American Medical Writer's Association. The award, consisting of a gold medal and certificate was presented to Dr. Alvarez at the dinner on the occasion of the ninth annual meeting of the association at the Jefferson Hotel, St. Louis, October 1. Dr. Alvarez is editor-in-chief of **Modern Medicine**, professional lecturer at the University of Illinois College of Medicine, and has had a distinguished career as gastroenterologist and teacher at the Mayo Foundation, University of Minnesota.

Dr. Harold Swanberg of Quincy, Illinois, nationally known radiologist, medical editor and organizer, was honored on the same occasion as recipient of the first Distinguished Service Award to be given by the American Medical Writer's Association. Dr. Swanberg is editor of the **Mississippi Valley Medical Journal and Radiologic Review**, secretary of the Mississippi Valley Medical Society (since 1935), and secretary of the American Medical Writer's Association since the organization in 1940.

Mississippi Valley Medical Society

Dr. Willard O. Thompson, Chicago, nationally known endrocinologist, teacher and medical author, has been honored by the Mississippi Valley Medical Society as its Distinguished Service Award Recipient for 1952. The award, consisting of a gold medal and a certificate, was presented to Dr. Thompson at the banquet on the occasion of the seventeenth annual meeting of the society at the Jefferson Hotel, St. Louis, October 2. Dr. Thompson is professor of Medicine, University of Illinois, editor of the **Journal of Clinical Endocrinology** and past-president of the Mississippi Valley Medical Society.

Dr. Philip S. Hench of Rochester, Minnesota, internationally known internist and research worker, was also honored by the Society as its Honor Award Recipient for 1952. Dr. Hench is professor of medicine, Mayo Foundation, University of Minnesota, and a 1950 Nobel Laureate in physiology and medicine.

A most cordial welcome awaits physicians of the South attending the Miami meeting of the Southern Medical Association. The meeting will consist of forty-nine half-day sessions presented by the twenty-one sections of the Association, which embrace every phase of medical practice. In addition to the section sessions there will be a general session, the annual dinner of the Association and outstanding scientific and technical exhibits.

This meeting will be the opportunity of the year for physicians of the South to attend a complete general medical meeting and at the same time enjoy a much-needed vacation during one of the most delightful periods of the year in beautiful Miami.

All activities of this meeting will be in the Municipal Auditorium in Bayfront Park and in near-by hotels, everything within walking distance. Good hotel accommodations are available for all who wish to attend this outstanding medical meeting.

Regardless of what any physician may be interested in, regardless of how general or how limited his interest, there will be at Miami a program to challenge that interest and make it worthwhile for him to attend.

Members of state and county medical societies may attend. Eligible physicians, members of state and county medical societies in the South **can be** and **should be** members of the Southern Medical Association. The annual dues of $10.00 include the Southern Medical Journal, a journal most valuable to physicians of the South, one that each should have on his reading table.

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American Public Health Association

The eightieth annual meeting of the American Public Health Association will meet in Cleveland, Ohio, October 20 to 24. The annual meetings of 38 related organizations will be held at the same time. Headquarters will be the Public Auditorium in Cleveland and some 5,000 public health specialists from all parts of the free world are expected to attend.

The American Public Health Association is the professional society of more than 12,000 men and women in public health work in the United States, Canada, Mexico, and Cuba. The annual meeting is the largest assembly in the world of public health workers. More than 400 speakers and discussants will participate in the sessions, workshops and panel discussions. Local arrangements are in charge of Dr. Harold J. Knapp, Commissioner of Health of Cleveland.

Medical Research Grants Announced By Lasdon Foundation

Grants for medical research totalling $264,424 have been appropriated for 1952 by the Lasdon Foundation, it was announced recently by William S. Lesdon, Chairman of the Board. More than a score of institutions here and abroad will share in the grants.

Dr. Morris Fishbein, Editor of the World Medical Association Bulletin, and Postgraduate Medicine, is one of the consultants to the Lasdon Foundation on the making of grants and on research problems.

The Foundation is a philanthropic organization established four years ago by the Lasdon brothers, William S., Milton S., Stanley S. and J. S., to support research exclusively in the fields of medicine and health, an interest stemming from the Lasdon family's long affiliation with the pharmaceutical industry. The four Lasdon brothers have been associated for many years in the Nepera Chemical Company, pharmaceutical manufacturers of Yonkers, New York.

Federal Security Agency

Public Health Service

Appointment of Dr. James A. Shannon as Associate Director of the National Institutes of Health was announced today by Surgeon General Leonard A. Scheele of the Public Health Service, Federal Security Agency.

Dr. Shannon succeeds Dr. Norman H. Topping, whose appointment as vice president in charge of medical affairs at the University of Pennsylvania becomes effective November 1. For the past three and one-half years, Dr. Shannon has served as Associate Director of the National Heart Institute, a major research unit within the National Institutes of Health.

Dr. Shannon is widely recognized for his original research in kidney function, chemotherapy, and malaria. He has served as guest investigator at the Physiological Laboratory, University of Cambridge, England, and as a member of the staff of the Marine Biological Laboratory at Woods Hole, Massachusetts.

Dr. Shannon resides at 4511 Sleasord Street, Bethesda, Maryland.

Dr. Norman H. Topping, of the Public Health Service of the Federal Security Agency, has been appointed vice president of the University of Pennsylvania in charge of medical affairs, effective November 1, Dr. Leonard A. Scheele, Surgeon General, announced today.

Dr. Topping is associate director of the National Institutes of Health at Bethesda, Maryland, research branch of the Public Health Service and an assistant surgeon general.

* * *

To stimulate satisfactory uniform labeling of chemical products, a Public Health Service committee is being reactivated to work with the Manufacturing Chemists Association.

This labeling program, Dr. Scheele indicated, has been developed for bulk packages of chemicals intended for commercial use and in no way affects the provisions of the Federal Caustic Poison Act, which applies to some caustic and corrosive chemicals intended for household use, or the Federal Food, Drug, and Cosmetic Act, which requires adequate warnings on the labels of all drugs.

* * *

To demonstrate how state and local health departments can help meet the health needs of older people, a hygiene of aging program is being established in the Public Health Service of the Federal Security Agency, according to an announcement by Surgeon General Leonard A. Scheele.

The program will be operated by the Division of Chronic Disease and Tuberculosis of the Bureau of State Services.

Dr. Cletus L. Krag, former research assistant of the Division of Gerontology, Washington University School of Medicine, will direct the program.

* * *

Detailed physical examinations of over 1,100 workers in uranium mines and mills in Colorado, Utah, New Mexico, and Arizona have revealed no evidences of health damage from radioactivity, according to an interim report to the industry released by the Public Health Service of the Federal Security Agency.

The examinations are part of a study of occupational health conditions in the uranium industry that has been under way since 1950.

(BULLETIN BOARD CONTINUED ON PAGE 592)

Classified Advertisements

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BOOK REVIEWS

Toxemias of Pregnancy. By William J. Deickmann, S.B., M.D. Ed. 2. 751 pages. Price, $14.50. St. Louis: The C. V. Mosby Company, 1952.

This is the second edition of the text, the first having been published in 1941. Rather than a textbook, it is a source book on toxemia of pregnancy in all its ramifications. The edition is somewhat enlarged, and has been completely revised.

The first portion of the book is devoted to the physiology of pregnancy. Considerable stress is placed on the changes in the electrolytes and in the role of the kidney. The etiology of eclampsia is discussed, but no conclusions are drawn, since the solution of this problem seems as far away as ever. The remainder of the book is devoted to the clinical aspects, treatment, and ultimate prognosis for mother and infant.

Although the book is not well designed for the medical student, it is, as previously stated, an excellent review of all the literature concerning this particular complication of pregnancy.

The bibliography is extensive. The index is excellent.

Physician's Handbook. By Marcus A. Krupp, M.D., Assistant Clinical Professor of Medicine, Stanford University School of Medicine: Director, Palo Alto Medical Research Foundation, Palo Alto; Norman J. Sweet, M.D., Assistant Professor of Medicine, University of California School of Medicine, San Francisco; Ernest Jawetz, Ph.D., M.D., Associate Professor of Bacteriology and Lecturer in Medicine and Pediatrics, University of California School of Medicine, San Francisco; and Charles D. Armstrong, M.D., Clinical Instructor in Medicine, Stanford University School of Medicine. Price, $2.50. 380 pages. Los Altos, California: University Medical Publishers, 1952.

This handy pocket-size reference manual is packed with bits of information useful to the physician. The fact that this is the seventh edition in 11 years attests to the place it has made for itself.

Throughout the book outlines for various types of physical and laboratory examinations are given. Descriptions of the techniques of many tests, with tables of normal values as well as illustrations by line drawing techniques, cover both diagnostic and therapeutic measures.

The book is conveniently divided into 30 chapters. The ingenious system of black lines at the edge of the page in lieu of a thumb index to find chapters quickly is used again. In addition there is a detailed subject index at the end. This book should be of help to medical student technicians as well as practicing physicians.

Living With Cancer. By Edna Kaehele. 160 pages. Price, $2.00. Garden City, New York: Doubleday and Company, 1952.

The author of this little book tells of her struggle to live after a doctor had given her six months to wind up her affairs and depart in peace. Since then, she has lived six years and is still going strong, although she says the cancer is still active. It is obvious that Mrs. Kaehele is deriving a great deal of satisfaction from having fooled her doctors, and it is hard to escape the suspicion that she dramatizes her case considerably. Nevertheless, there is much that a doctor can learn from it, and an uncomfortable amount of truth in many of her comments. For example, "Cancer is a deadly, loathsome enemy, and one to guard against, but I am convinced that fully as many people die of the fear of it as are killed by the cancer itself. Campaigns undertaken to 'educate' the public have all too frequently served only to keep alive ancient fears."

Mrs. Kaehele is wrong, however, in saying that "cancer . . . is as out of control today as when it was first observed . . . isolated cases are 'cured' by medical science." There are too many thousands of patients living from 5 to 25 years after treatment—or even longer—to be called "isolated cases."

Mrs. Kaehele describes in detail her radiation therapy, and the dreadful nausea that followed. It is quite possible, however, that after her nausea had run its course, the return to appetite and strength that came gradually may have meant that the treatment had been more effective than she was willing to admit. Certainly all experienced physicians have seen patients recover from cancers that seemed hopeless before treatment was begun.

The book should help doctors be more sympathetic and tactful in dealing with victims of cancer—and should help the victims be more optimistic. It is to be hoped that Mrs. Kaehele will live out her life expectancy, and that the rest of her life will be as fruitful as have the six years since she was told of her disease.

The Principles and Methods of Physical Diagnosis. Correlation of Physical Signs with Physiologic and Pathologic Changes in Disease. By Simon S. Leopold, M.D., Associate Professor of Clinical Medicine, School of Medicine and Graduate School of Medicine, University of Pennsylvania; Director of the Teaching of Physical Diagnosis, School of Medicine; Chief of the Thoracic Clinic, Hospital of the University of Pennsylvania. 430 pages with 390 illustrations. Price, $7.50. Philadelphia and London: W. B. Saunders Company, 1952.

This is yet another textbook on physical diagnosis, evidently issued because of the feeling that a really good survey in this field is a crying need. Such a volume is surely required, but this effort, despite its imposing title, does not fulfill the necessary criteria.

While the section on the examination of the chest is quite good, this book represents merely another attempt along standard lines to cover a subject which defies such an approach. In fact, any such text which offers only a superficial consideration of history-taking and of the correlation of signs and symptoms cannot be expected to be the answer.

The adage, "One picture is worth a thousand words," still holds, but the illustrations must be of good quality and not repetitious. A good photograph showing cervicofacial actinomycosis might well have been substituted for one of the two patients with Hodgkin's disease, and many of the poorer reproductions should have been omitted entirely.

There are also several statements with which many physicians would take issue. For instance, the author states (p. 352), "Subacute bacterial endocarditis . . . is due to streptococcal bacteremia, usually of the viridans group," when many cases of gonococcal, coliform, and staphylococcal endocarditis have been reported. Again, when luetic aortitis is discussed (p. 267), it is not the age of the patient

but the duration of the disease which is related to the onset of cardiovascular syphilis. Likewise the terms "heredosyphilis" and "mitral obstruction" are poorly chosen and misleading. Finally, repeating many of his fellow authors, the writer makes no mention of the delayed deep tendon reflex relaxation time so characteristic of myxedema.

Such an unevenly written and incomplete book cannot honestly be recommended to the medical profession at large.

Surgery of the Endocrine System. Recent Advances Applied to Surgical Problems. By James Hardy, M.D., Assistant Professor of Surgery, University of Tennessee Medical College. 153 pages. Price, $5.00. Philadelphia and London: W. B. Saunders Company, 1952.

In this book the author has summarized in very brief form a wealth of information on present-day concepts of the endocrine system, from both a physiologic and a surgical standpoint. He has paid especial attention to the abnormalities of function caused by injury or disease. He quotes various authorities in their special fields of investigation, besides giving the reader the benefit of a wide experience of his own. The bibliography appended is extremely complete.

The first chapter is an excellent brief discussion of the present-day concept of the alarm reaction as it applies to the surgical patient. The author quotes from various authorities regarding investigative work on cortisone and ACTH, and theorizes on the possible role of ACTH in the production of dehiscence of surgical wounds.

Chapters 2 and 3 discuss body fluids, shock, and nutrition. Chapter 4 deals with the process of convalescence, and goes into some detail as to the effects of rest in bed and of early ambulation.

In chapters 5 and 6 there are most interesting discussions of the relationships between infections and hormones, particularly the part that hormones play in combatting infection and in speeding repair.

The remainder of this monograph consists of brief but excellent discussions of the surgery of the thyroid, parathyroid, pancreas, adrenals, pituitary, thymus, and gonads.

It is rare that one sees such a wealth of information compiled in so small a book.

Lederle Announces Varidase

Another Lederle "first"—Varidase streptokinase-streptodornase — announced recently by Lederle Laboratories, makes available to the medical profession for the first time an enzyme product combining streptokinase and streptodornase in a single clinically-proven product.

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Varidase is indicated in the treatment of hemothorax, hematoma, empyema, osteomyelitis, draining sinuses, tuberculous abscesses, infected wounds or ulcers, severe burns, and other chronic suppurations. Its effectiveness in the treatment of other conditions is being extensively investigated and gives promise of a far wider range of usefulness.

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In Memoriam

JARVIS RUSSELL TERRY, M.D.

Dr. Jarvis Russell Terry, 72, for 41 years a physician here and holder of numerous professional and public honors during this long period, died at his home at 206 West Center Street, Lexington, North Carolina, on September 6, 1952.

Dr. Terry had not been in vigorous health for the past two years or more but had continued his practice with only brief interruptions since undergoing major surgery over two years ago. He was active in his medical practice until a very short time before death. There was rapid decline of his health during his last week.

Dr. Terry was born in Orange County, July 20, 1880, the son of the late Joseph W. and Queen Betts Terry. His esteemed father, a Confederate veteran, spent his final years at the home of his son and family and had many warm friends in Lexington.

Dr. Terry graduated from Trinity Park School, taught three years in the public schools of South Carolina and then attended the University of Nashville for a year before entering the University of Louisville medical school, from which he received his medical degree in 1911.

He married Miss Lola Leigh Morris of Greensboro. She survives him, along with two daughters, Mrs. R. C. Seaks of Washington, D. C., and Mrs. Allan Pickard of Lexington; one son, Joe G. Terry of this city; three grandchildren; a half brother, H. G. Terry of Durham, and a half sister, Mrs. F. I. Wilson of Jonesboro.

Throughout the years many honors came to Dr. Terry from fellow physicians, local citizens, and state officials. He served for a number of years on the city school board, was for several years county coroner, and had for a dozen years or more been a trustee of the North Carolina Tuberculosis Sanitorium, serving as a member of the building committee during the marked physical expansion of this great institution.

Only last year he was president of the Davidson County Medical Society. For some 12 summers he attended the Southern Pediatric Seminar of Saluda, where fellow physicians elected him president several years ago. He had served as physician for the Junior Order Children's Home since its opening here, and was for years a Southern Railway surgeon.

Dr. Terry was particularly devoted to the Rotary Club, of which he had for many years been a member and of which he was a past president. Over the years he had built up a perfect attendance record said not to have been equalled by any member in the history of the club.

A loyal and devoted Methodist, Dr. Terry had been a member of First Methodist Church here since locating in the city, and had served on its board of stewards and in other helpful capacities.

Dr. Terry was a very popular individual generally as well as in the medical profession. He was a very faithful attendant at many medical meetings, and his passing will leave a gap in the medical profession of this section that will be hard to fill.

Respectfully submitted,
JOHN M. ANDREW, M.D.,
Chairman, Bereavement Committee,
Davidson County Medical Society

BULLETIN BOARD

(CONTINUED FROM PAGE 589)

Dr. G. Burroughs Mider of Rochester, New York, has been appointed Scientific Director at the National Cancer Institute of the National Institutes of Health, according to an announcement by Surgeon General Leonard A. Scheele of the Public Health Service.

Dr. Mider is professor of cancer research and coordinator of cancer teaching in the School of Medicine and Dentistry at the University of Rochester.

Children's Bureau

A special grant to aid children with serious heart conditions in 12 Mid-western States has been made by the Children's Bureau, according to an announcement by Dr. Arthur J. Lesser, director of the Bureau's division of health services, Federal Security Agency. Children with congenital heart malformations, such as "blue babies," whose conditions can be helped by surgery, will have the chance to be operated on by experts in heart disorders. The program will use facilities located at Children's Memorial Hospital, Chicago, where there are surgeons and members of related professions skilled in diagnosing and performing these delicate operations.

UNITED STATES ATOMIC ENERGY COMMISSION

Reactor-Produced Polonium Now Available for Purchase

Reactor-produced radioactive polonium - 210 may now be purchased at Oak Ridge for research activities. This was announced recently by the Isotopes Division of the Atomic Energy Commission on the eve of the sixth anniversary of the nation's isotope distribution program.

Polonium is the first reactor-produced radioisotope to be sold which emits alpha particles. It can be used also as a source of high energy neutrons.

The Isotope Division, a part of the AEC's Oak Ridge Operations, and the U.S. licensing agency for purchases of significant quantities of radioactive materials, said the newly available polonium is needed by research groups for physical and biological investigations.

VETERANS ADMINISTRATION

The Veterans Administration is instituting a four-month training course in psychiatry and neurology to fit the needs of physicians without such previous training who are assigned to duty in 22 predominantly psychiatric hospitals. Physicians who have been engaged in general practice may request this training upon applying for a position at one of these hospitals.

The course will be held at the VA Hospitals in Coatesvile, Pennsylvania; Palo Alto, Calfornia; and a joint Downey-Hines, Illinois, program near Chicago, Illinois. Physicians will be employed at salaries commensurate with their training and experience (salary range: $5,500 to $11,800 per annum) and assigned to the course with travel and per diem for the four-month period.

Information and applications may be obtained from your nearest VA Hospital or Regional Office, or by writing to the Chief Medical Director, Veterans Administration Central Office, Washington 25, D. C.

Dr. Tiffany Lawyer, Jr., an associate in neurology at Columbia University, has been appointed as chief of the neurology section, of the psychiatry and neurology division, Veterans Administration Department of Medicine and Surgery, Vice Admiral Joel T. Boone, USN (MC) Retired, VA Chief Medical Director, announced recently.

A World War II Navy veteran, Dr. Lawyer succeeds Dr. Pearce Bailey, who resigned recently to accept a position as director of the Institute of Neurological Diseases and Blindness of the U. S. Public Health Service.

As chief of the neurology section, Dr. Lawyer will coordinate policies in the treatment of more than 10,000 veteran patients suffering from neurologic diseases in VA hospitals and outpatient clinics.

* * *

Post-Korea veterans who need outpatient treatment for disabilities that are presumed to have resulted from their service will be provided needed treatment by Veterans Administration until VA can determine whether their disabilities actually are service-connected.

Under existing regulations, outpatient treatment may be given only for service-connected disabilities after VA has determined that the disabilities actually are service-connected and then has authorized the treatment.

The change to permit treatment for presumed service-connected disabilities before final determination has been made applies only to veterans who served in the active U. S. military or naval forces any place in the world on or after June 27, 1950, the start of the Korean hostilities, and before a date yet to be set.

* * *

A veteran from North Carolina who studied for college from his bed in a Veterans Administration hospital has just been awarded his A.B. degree in journalism and, because of his high grades, was admitted to Phi Beta Kappa, honorary scholastic fraternity.

The veteran, George A. Booze of Winston-Salem, has spent five of the past ten years in VA hospitals, undergoing treatment for tuberculosis. He won his degree, by correspondence, from the University of North Carolina, while a patient in the VA hospital in Oteen, North Carolina. A grade average of 95.42 per cent entitled him to the coveted Phi Beta Kappa key. He is now awaiting his discharge from the hospital, and a chance to reach his long-awaited goal of newspaperman.

Lilly Replaces Stocks Damaged by California Quake

Eli Lilly and Company, Indianapolis pharmaceutical and biological manufacturer, has announced that Lilly products destroyed in California earthquakes will be replaced without cost to hospitals and retail pharmacists. It is an odd coincidence that the Lilly replacement policy was set up after another California disaster, that of 1906 in San Francisco.

The Lilly representatives in the Tehachapi vicinity are making the replacement of damaged Lilly stock their first order of business. The Lilly company also maintains a reserve of typhoid vaccine and other biological products in concentrated form for fast shipment during disasters. The company, aware of its public responsibilities in catastrophes, has its shipping personnel standing by twenty-four hours a day so that it can rapidly furnish products needed in disaster areas.

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Operating Room in Hospital	10.00	20.00	30.00	40.00
Anesthetic in Hospital	10.00	20.00	30.00	40.00
X-Ray in Hospital	10.00	20.00	30.00	40.00
Medicines in Hospital	10.00	20.00	30.00	40.00
Ambulance to or from Hospital	10.00	20.00	30.00	40.00
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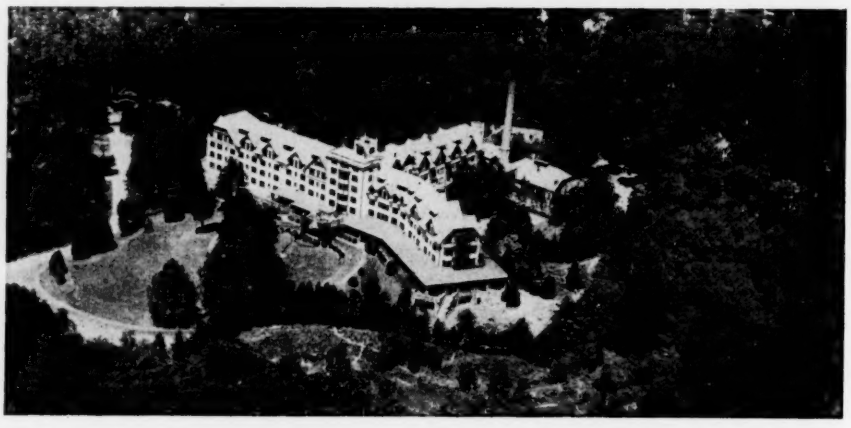

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Bacterial resistance	Tubercle bacilli with increased resistance to Nydrazid have been isolated from patients. Resistant organisms can also be cultured in vitro, but this phenomenon is virtually eliminated when cultures are exposed to streptomycin and Nydrazid simultaneously.	The clinical implications of bacterial resistance are not completely known. Patients harboring resistant organisms may continue to improve under treatment. The question of delaying the emergence of resistant bacilli by combined therapy must await further study.
Toxicity	Toxic reactions to Nydrazid are chiefly due to stimulation of the central nervous system. They are negligible in the therapeutic dose range, except in patients with convulsive tendencies.	It appears probable that central nervous reactions to Nydrazid can be controlled by barbiturates. But with continued use of the drug, it is not known what sensitivity reactions may occur.

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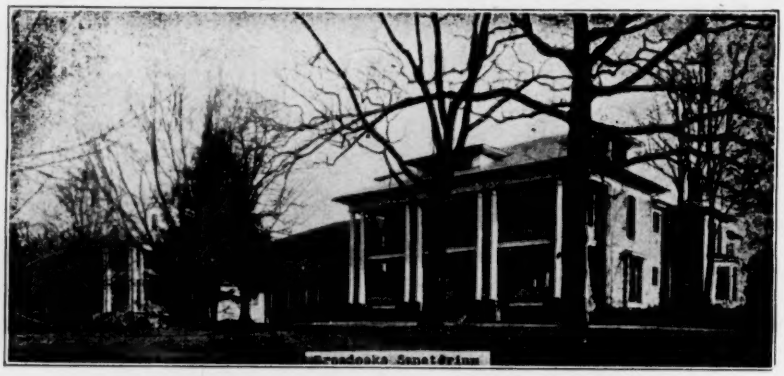

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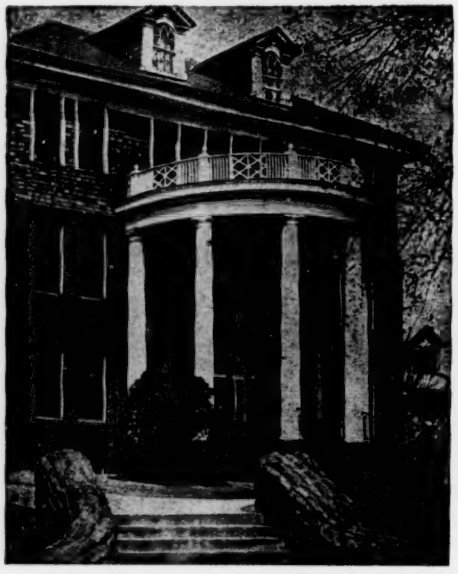

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Vahlquist, B. and Hackzell, G.: Acta Paediatrica *38*: 622 (1949).

NO. OF CASES	SEX	AGE AT ONSET	CYCLIC VOMITING	DURATION OF ATTACK	INTENSITY
31	8 ♀ 23 ♂	3 yrs. (mean)	3 out of 31	2½ hrs.	severe in all cases

TABLE CONT'D

NO. OF CASES	UNILATERAL HEADACHE	NAUSEA	FLIMMER SCOTOMA	VERTIGO	HEREDITY
31	18 out of 31	31 out of 31	12 out of 31	6 out of 31	20 out of 31

(reference given above)

In a study of 400 adult migraine patients, it was revealed that 34% had suffered attacks before the age of 15.* These investigators concluded that childhood migraine was a much greater clinical problem than was previously believed and that psychodynamic mechanisms played an important part in the disease.

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*Katz, J., Friedman, A.P., and Gisolfi, A.: New York State J. Med. *50*: 2269 (Oct.) 1950.

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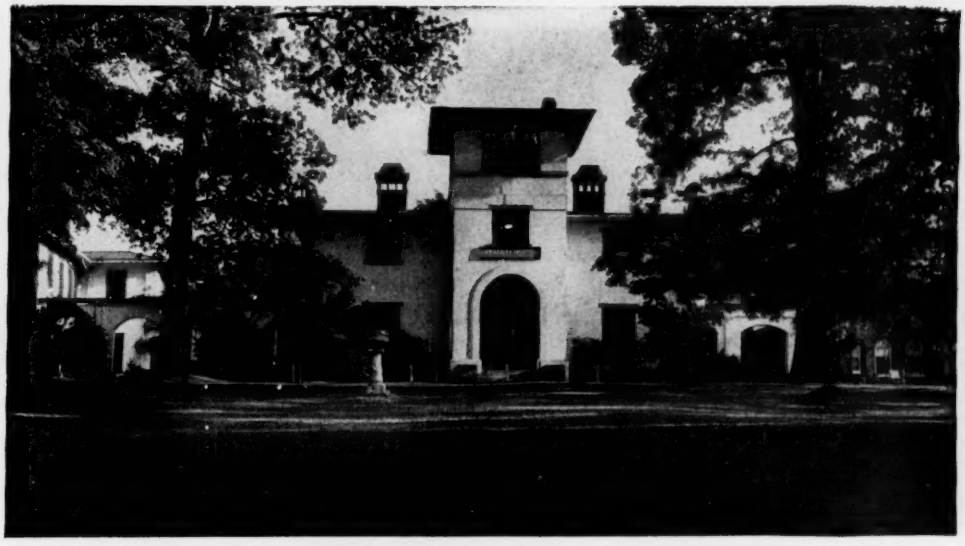

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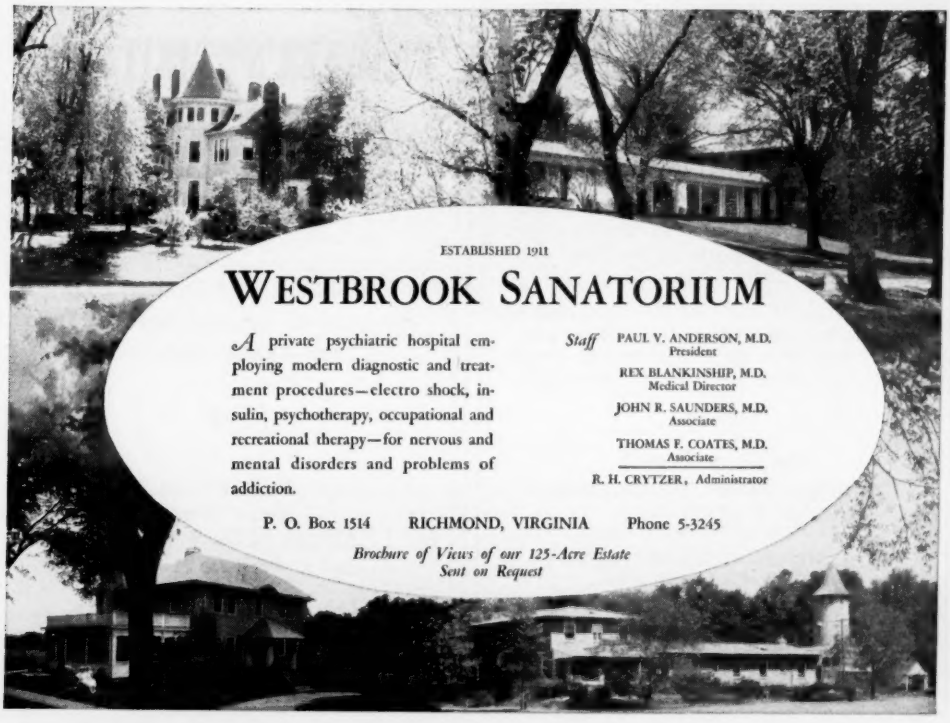
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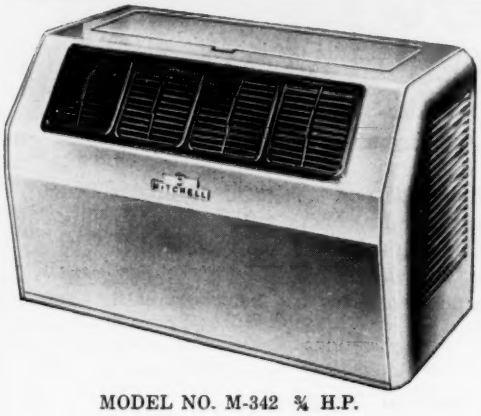

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INDEX TO ADVERTISERS

Abbott Laboratories 586
American Medical Directory XX
Appalachian Hall XVIII
Ayerst, McKenna & Harrison XXV
Baker Laboratories, Inc. XIV
Brawner's Sanitarium XXX
Broadoaks Sanatorium XXII
Carolina Surgical Supply Company XX
J. L. Crumpton XXXI
Dairy Council of North Carolina XXX
Davies, Rose & Company XXIII
Edgewood Sanitarium Foundation XXII
General Electric Co., X-Ray Dept. XII
Glenwood Park Sanitarium XX
Highland Hospital XXIV
Hospital Saving Assn. of N. C. III
Keeley Institute XXVII
Lederle Laboratories ..... 2nd Cover
Eli Lilly and Company ..... Insert-Front Cover
Mead Johnson & Company ..... 4th Cover
Merck & Company XIII
Monarch Elevator & Machine Co. XXII
Parke, Davis & Company ..... XXXII & 3rd Cover
Chas. Pfizer & Company ..... V, VI & VII
Physicians Casualty Association
Physicians Health Association XVIII
Pinebluff Sanitarium I
Powers and Anderson XXIX
Saint Albans Sanatorium XXVIII
Sandoz Pharmaceuticals XXVI
Schering Corporation ..... XI & XXI
G. D. Searle & Company XVII
Shaw Laboratories, Inc. XXIV
Southern Dairies XXVI
Southern Medical Association 588
E. R. Squibb & Sons XIX
Stuart Circle Hospital XXVIII
Thompson Homestead School XXII
Tucker Hospital XXX
Upjohn Company XV
Wachtel's, Inc. XXIV
The Wander Co. X
Westbrook Sanatorium XXIX
White Cross Hospital XVI
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1. Michael, N.: Ohio State M. J. *48*:42, 1952.
2. Carter, S., in Conn, H. F.: Current Therapy 1952, Philadelphia, W. B. Saunders Company, p. 610.
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